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Recent literature suggests that coaches play a significant role in creating a climate that fosters self-determined motivation among athletes. Coaching style influences athlete perception, motivation, and performance. Research supports that an autonomy-supportive coaching style is an effective motivational tool for coaches, whereas a controlling coaching style is ineffective. Previous research has shown that an autonomy-supportive interpersonal style increases self-determined motivation among athletes. However, previous research typically includes only one interpersonal coaching style. In addition, there is minimal research looking at needs satisfaction mediating the relationship between coaching behavior and athlete motivation through the SDT continuum. The purpose of this study was to examine the relationship of autonomy-supportive and controlling coaching behaviors with high school athletes' motivation as well as needs satisfaction. High school athletes from the Western region of North Carolina (n=162) completed the Coach Behavior Scale in Sport, Controlling Coach Behavior Scale, Behavior Regulation in Sport Questionnaire, and the Basic Needs Satisfaction Sport Scale. Correlations and multiple regression analyses were used to analyze relationships among coaching behaviors, needs satisfaction, and motivation. The hypotheses were 1) autonomy-supportive coaching behavior is positively related to higher forms of self-determined motivation and needs satisfaction, 2) controlling coaching behavior is negatively related to self-determined forms of motivation and needs satisfaction, and 3) needs satisfaction

mediates the relationship between coaching behavior and athlete motivation. As predicted, autonomy-supportive coaching behavior was positively and significantly correlated with higher forms of self-determined motivation (intrinsic:  $r=.463$ ; integrated:  $r=.512$ ; and identified:  $r=.558$ ), whereas controlling coaching behavior was positively and significantly correlated with more extrinsic forms of motivation (external:  $r=.411$  and amotivation:  $r=.279$ ). Autonomy-supportive coaching behavior was positively correlated with all three needs (competence:  $r=.479$ , autonomy:  $r=.583$ , and relatedness:  $r=.582$ ), and in turn, the three needs positively predicted higher forms of self-determined motivation. Multiple regression results indicate that the relationships of autonomy-supportive and controlling coaching behaviors with motivation are partially mediated by perceived needs satisfaction, but the relationships differed for different forms of motivation. Evidence for mediation was strongest for intrinsic motivation, and for integrated motivation and identified motivation, autonomous coach behavior added to the prediction suggesting the relationship was not fully mediated by needs satisfaction. For external regulation, controlling coaching behavior was a strong direct predictor with no evidence of mediation. The results indicate that autonomy-supportive coaching behavior predicts need satisfaction and enhances athlete motivation whereas controlling coaching behavior reduces self-determined motivation. Therefore, coaches are advised to use strategies that promote autonomy, such as providing options, giving athletes opportunities to make decisions, and allowing athletes to feel involved.

THE RELATIONSHIP OF PERCEIVED AUTONOMY-SUPPORTIVE  
COACHING BEHAVIOR WITH MOTIVATION AMONG  
HIGH SCHOOL ATHLETES

by

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## CHAPTER I

### INTRODUCTION

The coach has been recognized as a powerful socializing agent in the sport domain (Amorose & Anderson-Butcher, 2015; Horn, 2008; Smoll & Smith, 2002). The way in which coaches at all competitive levels establish their sport environment can impact athletes' behaviors, cognitions, and affective responses (Amorose & Anderson-Butcher, 2015). Understanding particular coaching styles that promote positive behaviors, experiences, and psychological functioning among athletes, as well as those that minimize maladaptive behaviors, is an important area of exploration for researchers and practitioners alike. Research shows us that coaching behavior leads to needs satisfaction, which in turn leads to motivation (Amorose & Anderson-Butcher, 2007, 2015). The literature connects coaching behavior, needs satisfaction, and motivation, however, there is limited research looking at the role needs satisfaction plays on the relationship between coaching behavior and athlete motivation. The goal of this study is to further our understanding of the role needs satisfaction plays in the relationship between coaching behavior and athlete motivation, as well as the relationship between autonomy-supportive and controlling coaching behaviors on athletes' needs satisfaction and motivation. Autonomy-supportive coaching behavior aims to promote higher forms of self-determined motivation, which has been identified in research as a critical part of athlete

motivation and performance (Amorose & Anderson-Butcher, 2015; Weiss & Amorose, 2008). The coach is central to athlete development in sport and one of the keys to facilitating self-determined forms of motivation (Mallett, 2005a). Self-determined forms of motivation promote the overall establishment, maintenance, and retention of personally valued and challenging goals, otherwise known as intrinsic motivation (Dweck, 1986). Intrinsic motivation is a crucial concept to consider when studying the relationship between coaching behavior, needs satisfaction, and motivation. According to Deci and Ryan (2000b), intrinsic motivation is considered the act of doing an activity for inherent satisfaction instead of separable consequences. Positive coaching styles have been associated with self-determined motivation and needs satisfaction, indicating that low levels of autocratic behavior, positive and constructive feedback, charismatic leadership, and knowledge of the sport or topic influences motivation (Meyer, 1997).

An effective coach utilizes and promotes the basic human needs based on the Self-Determination Theory (SDT) of autonomy, competence, and relatedness, creating a sense of fulfillment and success among athletes (Amorose & Anderson-Butcher, 2015; Deci & Ryan, 2000a; Deci & Ryan, 1985). Deci and Ryan (1985) propose that individual experiences of autonomy, competence, and relatedness are necessary for the maintenance and development of intrinsic motivation. Relatedness is the feeling of connection with others, and this relationship provides security and comfort within individuals. When athletes have a sense of safety and comfort in their sport, and among their teammates, they are more likely to experience interest and enjoyment in their sport. A sense of belonging creates and enhances intrinsic motivation in athletes. Competence is

possessing a required skill, knowledge, or qualification to exhibit a sense of competency within a certain topic. Environmental and social factors that support feelings of competence are presumed to facilitate intrinsic motivation. Autonomy is considered as the freedom from external control and the freedom to make individual decisions; autonomy support can be viewed as a democracy — athletes have the freedom to contribute and make individual decisions. The coach's ability to promote individual decisions and a sense of control fosters autonomy within athletes.

SDT proposes that the perception of autonomy, competence, and relatedness promotes positive motivation -- intrinsic motivation and the more self-determined forms of extrinsic motivation (Mallett, 2005b). Mallett and Hanrahan (2004) found that people are more intrinsically motivated when they perceive success at something. Intrinsic motivation is influenced by perceived autonomy, competence and relatedness, and can be aided and developed through coaches, teammates/friends, parents, or individually (Mallett & Hanrahan, 2004). In other words, motivation is linked to coaching behavior through the perception of needs satisfaction in autonomy, competence, and relatedness. Perceived needs satisfaction, specifically autonomy, promotes an individual's sense of control by oneself — self-regulation. An autonomy-supportive coach develops and engages in behavior that promotes self-regulation of behavior; acknowledges athletes' feelings and thoughts; and minimizes stress and control (Amorose & Anderson-Butcher, 2015). According to Vallerand and Maggeau (2003) the following are considered autonomy-supportive behaviors presented by coaches: acknowledge athletes' feelings and perspective, provide opportunities for choices within specific limits, provide rational

explanations for tasks and rules, provide athletes with opportunities for decision making and independent work, provide positive and insightful feedback, avoid controlling behavior, and prevent ego involvement in decisions and actions.

Coaches have a significant impact on athletes' psychological and behavioral reactions, influencing needs satisfaction as well as motivation (Amorose & Anderson-Butcher, 2015). It is important to establish an understanding of coaching behaviors that promote needs satisfaction and intrinsic motivation among adolescent athletes. When intrinsically motivated, an athlete is moved to participate for fun or the challenge rather than external products, reward, or pressures (Deci & Ryan, 2000b; Matosic, Cox & Amorose, 2014). Extrinsic motivators are considered to be external forces such as reward, pressures, punishment, or products. Extrinsic reasons can be either controlling or autonomous (Matosic, Cox & Amorose, 2014). Autonomous forms of motivation include: integrated regulation (i.e., participating in sport because it is a part of the individual's identity) and identified regulation (i.e., participating in sport because the individual value the benefits) (Matosic, Cox & Amorose, 2014). The controlling forms of motivation include: introjected regulation (i.e., participating in sport as a result of pride or avoiding feeling guilt or anxiety), external regulation (i.e., participating in sport for social approval or reward), and amotivation (i.e., participating in sport without any desire) (Amorose & Anderson-Butcher, 2015; Matosic, Cox & Amorose, 2014). SDT research indicates that athletes experience more positive emotions, satisfaction, effort, persistence, and sport intentions when they experience intrinsic motivation and more autonomous forms of extrinsic motivation compared to more controlling forms of motivation

(Matosic, Cox & Amorose, 2014; Blanchard, Amoit, Perreault, & Vallerand, 2009; Pelletier, Fortier, Vallerand & Brière, 2001).

When looking at motivational forms, intrinsic motivation has consistently been the strongest predictor of positive affective, behavioral, and cognitive consequences, and therefore, should be considered a significant form of motivation influencing an athlete's sport experience (Matosic, Cox & Amorose, 2014; Pelletier et al., 2001). SDT helps predict how different events within the social setting of sport such as level of competition, coaching behavior, or external forces may influence intrinsic motivation. Further, the theory states that the influence of social context on intrinsic motivation depends on the extent to which it affects athletes' feelings of autonomy, competence, and relatedness (Matosic, Cox & Amorose, 2014).

Coaching effectiveness is a frequent topic of interest and importance among researchers and practitioners alike. Research on coaching effectiveness is based on the assumption that coaches have a significant influence not only on the performance and behavior of their athletes, but also on athletes' psychological and emotional health (Amorose & Anderson-Butcher, 2015; Matosic, Cox & Amorose, 2014). Researchers conducting studies on coaching effectiveness have generally tried to identify the particular coaching characteristics, leadership styles, behavioral patterns, practice techniques, competencies, cognitions, performance strategies, or motivational influences that are most effective. Coaching effectiveness is typically studied in terms of outcome scores or psychological or behavioral measures, such as the motivation inventory or the sport climate questionnaire (Ryan, 1982; Amorose & Anderson-Butcher, 2015). In other

words, effective coaching is interpreted through results such as successful performance outcomes (e.g., win-loss percentages, athlete development, or success at an elite level) or positive psychological reactions from the athletes (e.g., intrinsic motivation, high levels of sport enjoyment and satisfaction, high self-esteem, high perceived autonomy, competence, and relatedness). A coach's overall effectiveness in generating athletes' motivation is related to coaching behavior and style. Effective coaching leads to intrinsic motivation, enjoyment, needs satisfaction, and self-esteem (Amorose & Butcher, 2015; Boardley, Kavussanu, & Ring, 2008; Smith, Smoll, & Curtis, 1979).

What makes an effective coach? Researchers and practitioners alike have been trying to answer this question. Flett, Gould, Griffes, and Lauer (2013) reported that less effective coaches try to create a sense of family within the team, but tend to use extremely negative, militaristic coaching strategies that are not developmentally or psychologically appropriate. In addition, less effective coaches generally justify their negative approach due to the perceived dangers within society and attempt to toughen their players through harsh methods -- less effective coaches institute the "tough love" policy. The use of negative approaches and harsher methods generally creates negative psychological reactions (needs satisfaction) among athletes, resulting in athletes having less motivation to practice or perform in their sport. Controlling behaviors have been considered less effective style of coaching. Bartholomew and colleagues (2010) defined controlling coaching behaviors as authoritarian and autocratic, which is thought to hinder autonomous forms of motivation. In contrast, more effective coaches challenge players while being supportive, attempting to develop close relationships and simultaneously

generating a positive team climate (Flett et al., 2013). These coaches appear to be more open to coach training and others' ideas -- they could be considered lifelong learners. Effective coaches promote autonomy, competence, and relatedness, and foster the transference of life skills from sport to life.

Studies of coaching effectiveness often use a SDT framework (Ryan & Deci, 2000) to identify the extent to which coaches utilize autonomy-supportive or controlling behaviors in their relationships with athletes (Bartholomew, Ntoumanis & Thøgersen-Ntoumani, 2010; Mageau & Vallerand, 2003). Effective coaches engage in behaviors that provide self-choice, self-initiation, self-regulation of behavior, acknowledgement of athletes' thoughts and feelings, and minimize the use of pressure and control (Amorose & Anderson-Butcher, 2015). Specific behaviors that constitute an autonomy-supportive coaching style include the following: asking about and acknowledging athletes' feelings, providing opportunity for athletes to make decisions and act independently, providing athletes with meaningful explanations for activities, limits, and rules, providing positive performance feedback, minimizing behaviors that create ego involvement, and avoiding control, guilt-induced criticism, and controlling statements (Amorose & Anderson-Butcher, 2015). On the other hand, coaches using a controlling interpersonal style generally engage in behaviors that pressure athletes to think, feel, and act in a way that meets the needs/wants of the coach. According to Bartholomew and colleagues (2010), examples of a controlling interpersonal coaching style includes behaviors such as the following: using social comparison to evaluate athletes, using harsh critical feedback in order to motivate athletes to perform better, using rewards to manipulate athletes'

behavior, recognizing athletes solely when they perform well and withdrawing attention when athletes struggle, using assertive techniques to demonstrate power in order to force athlete cooperation, and attempting to influence athletes' behaviors outside of the sport setting.

De Marco and McCullick (1997) reported characteristics of expert coaches, such as Vince Lombardi and Pat Summitt, suggesting that expert coaches possess extensive, specialized knowledge, organize knowledge hierarchically, exhibit autonomy, develop self-monitoring skills, and are highly perceptive. Coach Pat Summitt's instructional behavior is described as possessing many autonomy-promoting qualities; she provided positive and constructive feedback, influencing needs satisfaction and motivation (De Marco & McCullick, 1997). Each of the coaches in their study exhibited successful integration of coaching expertise with continual commitment to the personal development and success of their athletes (De Marco & McCullick, 1997). Coaches such as Coach Mike Krzyzewski have been known to use autonomy-supportive coaching behavior. In other words, he has been known to adapt to his players' personality, character, and skill, allowing them to feel in control. Krzyzewski explains that his players perceive that he has an open coach-player relationship and creates a support system that promotes intrinsic motivation (Kryzyzewski & Spatola, 2009).

Research on coaching styles indicates that an autonomy-supportive coaching style tends to foster intrinsic motivation within athletes, as opposed to controlling coaching behavior (Amorose & Anderson-Butcher, 2007, 2015). When thinking about the influence coaches have on the sport environment, an important question to address is:

what coaching behaviors promote high levels of motivation (Hagger & Chatzisarantis, 2007)? Research suggests that coaching styles that satisfy all three psychological needs within SDT create high levels of intrinsic motivation, resulting in better sport performance. On the other hand, controlling coaching behavior can lead to negative achievement, behavioral, and psychological outcomes (burnout, poor performance, low self-esteem, low levels of sport competence, a feeling of un-relatedness, etc.).

The way in which coaches establish the game and practice environments, the type of feedback provided, the techniques used to motivate athletes, the forms of relationships the coach establishes with their players, and can all influence athletes' motivation and affective responses (Amorose & Anderson-Butcher, 2015). A coach's behavior can influence whether an athlete enjoys the experience, learns at a high level, and demonstrates high effort and persistence within the sport. Establishing an understanding of which coach interactive style promote positive experiences, behaviors, and psychological functioning among athletes is an important topic for professionals and researchers alike (Amorose & Anderson-Butcher, 2015).

Recent research has consistently demonstrated that autonomy-supportive behaviors promote positive forms of motivation and well-being among athletes (Amorose & Anderson-Butcher, 2015; Mallett, 2005a, 2005b; Mallett & Hanrahan, 2004). In contrast, controlling behaviors have generally negatively related to athletes' motivation and well-being (Amorose & Anderson-Butcher, 2015). Most of the studies investigating the motivational outcomes of coaches' interpersonal styles look at either autonomy-supportive or controlling behaviors, but not both.

Amorose and Anderson-Butcher (2015) recently looked at the combined influence of both controlling and autonomy-supportive coaching behavior on motivation. They hypothesized that autonomy-supportive coaching behaviors would positively relate to higher forms of self-determined motivation, and negatively relate to more maladaptive responses. Controlling behaviors were then predicted to show an opposite pattern of relationships (Amorose & Anderson-Butcher, 2015). Amorose and Anderson-Butcher (2015) found that autonomy-supportive behaviors related to stronger self-determined motivation, whereas perceived controlling behaviors demonstrated a stronger effect on maladaptive outcomes and motivation. The perception of a controlling interpersonal coaching style was found to be a strong predictor of negative forms of motivation, such as introjected regulation, external regulation, and amotivation. Amorose and Anderson-Butcher suggest that the full motivation continuum should be considered to determine whether the results are, in fact, meaningful.

This body of literature creates a relatively clear picture of motivational implications of coaching behaviors, but questions remain. This study extends that research by examining the relationship between both autonomy-supportive and controlling coaching behaviors and high school athletes' motivation and needs satisfaction. As noted, multiple studies have investigated either autonomy-supportive or controlling coaching styles, but very few have included both controlling and autonomy-supportive coaching behavior. It is important to involve both coaching styles, as controlling coaching behavior can influence extrinsic and intrinsic motivation (Matosic, Cox & Amorose, 2014; Amorose & Anderson-Butcher, 2014). Furthermore, there is

limited research on the role that needs satisfaction plays in the relationship of coaching behavior to athlete motivation. Although literature suggests that coaching behavior influences needs satisfaction, which in turn influences motivation, it is important to look at needs satisfaction as a potential mediator of the relationship between coaching behavior and athlete motivation. The potential of a mediation model helps guide direction for coaches. The exploration of needs satisfaction mediating the relationship between coaching behavior and athlete motivation provides important information to guide coaches, specifically indicating key needs satisfactions that need to be targeted to promote higher forms of self-determined motivation. Furthermore, research, although limited, indicates a small relationship between higher forms of self-determined motivation and optimal performance, proving to be valuable to coaches (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Finally, further research is needed to understand the relationship between coaching behaviors and adolescent motivation extending across the motivation continuum. Therefore, this research addresses those issues and examines the relationships of coaching behavior, needs satisfaction, and athlete motivation. Furthermore, the study's specific aim is to look at needs as a potential mediator of the coach behavior - athlete motivation relationship across the continuum of motivation.

### **Research Questions and Hypotheses**

The purpose of this study is to examine the relationships of coach behavior, specifically autonomy-supportive and controlling, to athlete needs satisfaction and motivation. Needs satisfaction is examined as a potential mediator between coaching behavior and athlete motivation. The following are the specific hypotheses:

- 1) Perceived coaching behavior is related to athlete motivation.
  - a) Autonomy-supportive coaching behavior is positively related to higher forms of self-determined motivation. Specifically, autonomy-supportive coach behavior will be positively related to intrinsic, integrated and identified motivation.
  - b) Controlling behavior is related to more extrinsic forms of motivation. Specifically, controlling coach behavior will be positively related to external and introjected motivation.
- 2) Perceived coach behavior is related to athlete needs satisfaction.
  - a) Autonomy-supportive coaching behavior is positively related to all three needs (autonomy, competence, and relatedness).
  - b) Controlling coaching behavior is negatively related to all three needs.
- 3) Need satisfaction is related to athlete motivation.
  - a) Satisfaction of each of the three needs (autonomy, competence, and relatedness) is positively related to higher forms of self-determined motivation – intrinsic, integrated, and identified motivation.
  - b) Satisfaction of each of the three needs is negatively related to more extrinsic forms of motivation (i.e., introjected, external) and amotivation.

4) Mediation will be explored using Baron and Kenny's (1986) regression model.

Several regressions will be completed with each of the three needs satisfaction scores entered as predictors of each motivation on the continuum, controlling for coach behaviors.

a) It is expected that coaching behaviors will not add to the prediction, supporting the mediation model.

## CHAPTER II

### REVIEW OF THE LITERATURE

The basis of most research on coach behavior and athlete motivation is self-determination theory (SDT). This chapter will present the foundation of self-determination theory and review the literature associated with the impact of coaching behaviors on athlete self-determined motivation.

#### **Self-Determination Theory**

Self-Determination Theory (SDT) is defined as being a macro theory of human motivation and personality. SDT is based on a broad framework that concerns innate psychological needs among individuals. The theory was initially created by Deci & Ryan (1985). This theory “articulates a meta-theory for framing motivational studies, a formal theory that defines intrinsic and varied extrinsic sources of motivation, and a description of the respective roles of intrinsic and types of extrinsic motivation in cognitive and social development and in individual differences” (Zhao & Zhu, 2012 pp. 432). The initial focus of the theory is on motivation, however, the propositions also focus on social and cultural factors that support or weaken athletes’ sense of volition and initiative, in addition to the quality of their performance. Self-Determination Theory is compiled of three important needs: autonomy, competence, and relatedness. An individual’s experience of these three conditions creates self-determined motivation that enhances

performance. These conditions are considered to be the highest quality forms of motivation for activities, including enhanced persistence, creativity, and performance. In addition, SDT proposes that there will be a detrimental impact on wellness and performance if any of these three psychological needs is unsupported or negatively impacted. The theory states that the basic psychological needs of perceived competence, autonomy and relatedness all impact an individual's motivational level, which in turn, affects performance. Deci and Ryan (1985) propose that individual experiences of autonomy, competence, and relatedness are necessary factors for the maintenance and development of intrinsic motivation.

#### *Perceived Relatedness*

Self-determination theory suggests that intrinsic motivational processes are able to take root in situations and environments that provide an opportunity for relatedness. Relatedness can be defined as feeling or being connected with others, and this connection provides security and comfort within individuals. Baumeister and Leary (1995) develop and identify the idea that relatedness involves a feeling of connection or belonging with other individuals. Perceived relatedness is essential for intrinsic motivation to develop and thrive. When athletes feel secure in their sport, and among teammates, they are more likely to experience interest or enjoyment in their sport. In other words, feeling accepted and loved tends to create and enhance intrinsic motivation. Perceptions of teammate and coach relatedness significantly predict, and are positively, related to intrinsic motivation within athletes (Stults-Kolehmainen, Gilson & Abolt, 2013). The condition of relatedness provides a connection with others that gives athletes a sense of purpose, and this feeling

of purpose or belonging pushes athletes to perform better (to not disappoint those they feel connected with).

### *Perceived Competence*

Competence is best defined as being competent or possessing a required skill, knowledge, or qualification. Environmental and social factors that support feelings of competence are presumed to facilitate intrinsic motivation, and therefore, impact performance. However, any factor or condition that diminishes feelings of competency is theorized as undermining intrinsic motivation (Hagger & Chatzisarantis, 2007). The general need for competence reflects the human innate desire to feel effective, and to feel successful displaying their competencies. Competence can be evaluated through two different conditions: mastery (task-referenced standards and self-referenced standards) and performance (normatively-referenced standard). In order to improve competence, athletes need to work on improving individual mastery skills to accomplish a goal. Perceived competence is vital to the motivation and success of an athlete. It is important for athletes to feel competent in their individual sport, but it is also important that athletes perceived their coach to be competent as well. Several studies (Ommundsen, Lemyre, Abrahamsen & Roberts, 2010; Wang, Liu, Lochbaum & Stevenson, 2013) have shown that coach competence related positively with higher intrinsically regulated motivation among athletes. Wang and colleagues (2013) conducted a similar study investigating whether perceived competence moderated the relationships between achievement goals and intrinsic motivation for sports. The study placed university students into groups of high and moderate perceived competency, and they found that mastery avoidance had no

relationship with intrinsic motivation when perceived confidence was high, however, the relationship was significantly negative when perceived competence was moderately low (Wang et al., 2013). In conjunction with this research, Ommundsen and colleagues (2010) investigated the mediating role of youth soccer players' needs satisfaction (perceived competence, autonomy and relatedness) in the relationship between coach created motivational climate and players' motivation. Satisfaction of all three needs significantly and partially mediated the relationship between a mastery climate and intrinsic motivation (Ommundsen et al., 2010). Furthermore, a mastery climate and needs satisfaction positively related to more intrinsic motivation (Ommundsen et al., 2010). In addition, to coach and athlete competence creating more self-determined motivation, autonomy also developed strong intrinsic motivation in athletes.

#### *Perceived Autonomy*

The perception of autonomy is necessary for the maintenance and enhancement of intrinsic motivation, and environmental conditions that support or facilitate autonomy developed motivation. Autonomy is considered as the freedom from external control and the freedom to make individual decisions; autonomy support can be viewed as a democratic and independent environment. The psychological need for autonomy pertains to the individual's feeling and idea that they are in control of their decisions and behaviors -- independence. Perceived autonomy support in the sport environment is positively associated with intrinsic motivation and better sport performance. Coaches' autonomy creates a supportive environment that promotes self-determined motivation, and research has shown that self-determined motivation (or intrinsic motivation) tends to

produce successful sport performance. Theory and research support the conclusion that an autonomy-supportive coaching style is an effective motivational tool for coaches, in contrast, controlling coaching behavior is ineffective (Amorose & Anderson-Butcher, 2015). For example, Hagger and Chatzisarantis (2007) reported that perceived autonomy support from an instructor/leader was positively correlated with relatedness, competence, and intrinsic motivation. The relationship between autonomy support and intrinsic motivation was found to be mediated by perceived levels of competence (Hagger & Chatzisarantis, 2007). Pepijn, Kavussanu, and Kompier (2015) examined whether athletes' perceived autonomy support (showing interest in athletes' opinions and input, and praising autonomous behavior in athletes) differed across contexts, and whether the relationships between autonomy support and effort, enjoyment and anxiety were affected by context/sport type. Research showed that praise for autonomous behavior was associated with effort, but only when interest in athlete input was high, and this effect was shown to be stronger in training than competition (Pepijn, Kavussanu, & Kompier, 2015).

It is important to have an autonomy supportive environment to create a climate that influences the growth of higher forms of self-determined motivation among athletes. Fenton and colleagues (2014) looked at the perceptions of social environment created by youth coaches to levels of autonomous and controlled forms of motivation in young football players. The participants completed a questionnaire evaluating perceptions of autonomy support and controlling coaching styles, as well as motivation toward their sport (Fenton, Duda, Quested, & Barrett, 2014). The results suggested that players'

perceptions of autonomy-supportive coaching behavior positively predicted more self-determined forms of motivation for sport engagement among youth football players (Fenton et al., 2014). Further, controlling coaching behaviors were positively linked to negative motivation, such as controlled motivation (Fenton et al., 2014). The perception of an autonomy-supportive coaching environment/style has a significant impact on athlete motivation. The sport environment has many social influences, however, the coach is the main social influence on sport environment and climate. The correlational relationship between autonomy and self-determined forms of motivation influences motivation and needs satisfaction among athletes, generating importance for the topic

### **Athlete Motivation**

Many researchers believe that motivation is the foundation and key to sport performance and achievement (Amorose & Anderson-Butcher, 2007, 2015). A majority of the research within motivation has been developed from a self-determination perspective in sport. Self-determination theory proposes a differentiated view of motivation that includes different forms of motivation through which the outcomes related to a specific activity are pursued (Hagger & Chatzisarantis, 2007). These forms of motivation include amotivation, extrinsic motivation, and intrinsic (self-determined) motivation. The Self-Determination Continuum starts with amotivation (highest form of non self-determined motivation), progresses through more extrinsic motivation (external, introjected, identified, and integrated regulation), and ends with the highest form of self-determined motivation which is intrinsic motivation. According to SDT, intrinsic motivation is considered to be the highest form of self-determined motivation on the

motivation continuum. Amotivation is a non-regulatory form of motivation that can be defined as lacking any motivation to participate in an activity, characterized by a lack of perceived value in the task; it is often not used in conjunction with needs satisfaction research, however, amotivation can be related to competence. Intrinsic motivation is defined as the motivation that comes from within an individual or athlete; also, the personal satisfaction derived through self-determined achievement. It is important to look at the motivation continuum between amotivation and intrinsic motivation to determine perceived satisfaction among athletes. Blecharz and colleagues (2015) studied further psychometric evaluations of the Sport Motivation Scale (SMS), specifically looking at intrinsic motivation predicting performance satisfaction among athletes. The study investigated motivation across the SDT continuum, working with 197 athletes competing at a regional or national level (Blecharz, Horodyska, Zarychta, Adamiec, & Luszczynska, 2015). The results suggested a correlation between autonomous forms of motivation and higher levels of self-efficacy, performance satisfaction, and task-oriented motivational climate in sport (Blecharz et al., 2015). Research involving motivation shows us that autonomy-supportive interpersonal coaching styles are important in relation to positive needs satisfaction, and in turn, self-determined motivation. The overall goal is to promote the highest level of self-determined motivation, which is intrinsic motivation.

### *Intrinsic and Extrinsic Motivation*

Intrinsic and extrinsic motivation are popular topics within sport and exercise psychology. The SDT motivation continuum places intrinsic motivation as the highest form of self-determined motivation, however, there are two other higher forms of self-

determined motivation. Integrated and identified motivation are considered to be extrinsic motivation on the SDT continuum, but they are higher forms of self-determined motivation. Integrated motivation is a self-determined form of motivation on the extrinsic motivation continuum; athletes are motivated by the task because it is integrated and congruent within their identity. Although intrinsic motivation is the ultimate goal, integrated motivation is a positive form of self-determined motivation that is promoted by needs satisfaction and participation. Following integrated motivation on the continuum is identified motivation — the athlete finds the task of value and importance. Higher forms of self-determined motivation, such as intrinsic, integrated, and identified, have been linked to perceived needs satisfaction among coaches and athletes alike. Hollembeak and Amorose (2005) tested whether perceived autonomy, competence, and relatedness mediated coaching behavior and intrinsic motivation among athletes. Within the article they state the many benefits of being intrinsically motivated -- when extrinsic rewards and reinforcements are not available, individuals are more likely to choose to participate and work hard (Vallerand, 1997). Individuals who are intrinsically motivated experience lower levels of performance-related anxiety and exhibit higher levels of skill acquisition in comparison to individuals extrinsically motivated (Vallerand, 1997; Vallerand & Losier, 1999; Weiss & Ferrer Caja, 2002).

Intrinsic motivation is typically regarded as the more positive and influential motivation, and numerous coaching behaviors have been associated with it. Hollembeak and Amorose (2004) approached coaching behavior and intrinsic motivation in a different way, meaning that they examined more than one coaching behavior and how it affected

athlete motivation. Using the SDT framework, they tested whether perceived needs satisfaction mediated the relationship between perceived coaching behavior and athletes' intrinsic motivation (Hollembek & Amorose, 2004). More specifically they asked 280 college athletes to complete questionnaires assessing perceived coaching behaviors, as well as their motivation (specifically intrinsic motivation), and perceptions of needs satisfaction (autonomy, competence, and relatedness). As expected, the results suggested that autonomy-supportive coaching behavior positively correlated with autonomy, whereas, autocratic behavior demonstrated the opposite. The study also evaluated the relationships between training and instruction, positive feedback, and social support using questionnaires. The findings from this study were significant, indicating a relationship between training and instruction, positive feedback and social support; in addition, the results showed an indirect effect on motivation (Hollembek & Amorose, 2004). The main relationship discovered was between democratic and autocratic behavior, and the causal impact they have on motivation. Autocratic behavior and democratic behavior were found to have a significant indirect causal impact on athlete intrinsic motivation. Democratic behavior promoted intrinsic motivation within athletes, and this could be associated with perceived autonomy and support, as motivation is connected with needs satisfaction. The research findings show that coaches' decision making styles have an impact on self-determined motivation. The direct relationship found between coaches' decision making and intrinsic motivation shows that motivation can be correlated to a multitude of things, but the coach has a significant impact on needs satisfaction and motivation.

### *HMIEM Model*

SDT suggests that intrinsic motivation predicts well-being, performance, and persistence because intrinsic goals allow people to satisfy needs for autonomy, relatedness, and competence (Deci & Ryan, 2000). Some of the motivation research (Vallerand, Amoura, Baldes, & Gillet, 2010) posed the question: does an autonomy supportive coaching style positively relate to an athlete's self-determined motivation, and in turn, create better performance? Vallerand and colleagues predicted that "contextual self-determined motivation was hypothesized to be associated with athletes' self-determined motivation at the situational level prior to a competition that was hypothesized to subsequently predict higher levels of sport performance" (Vallerand et al., 2010). Contextual self-determined motivation is based upon the specific context that enhances self-determined or intrinsic motivation, which is dependent upon different situations (i.e. "situational level"). Based on SDT Vallerand and colleagues proposed the "HMIEM" model -- a hierarchical model of intrinsic and extrinsic motivation. The HMIEM model allows researchers to evaluate and understand different determinants of motivation. Specifically, the model within the study postulated that autonomy-supportive coaching behavior would facilitate intrinsic motivation among athletes in a sport activity (Vallerand et al., 2010). A total of 101 judokas filled out questionnaires following a weight lifting session evaluating autonomy-supportive coaching behavior and individual athlete self-determined motivation. The research investigated motivation and motivational outcomes through the HMIEM model, and the results proved to be significant. The study revealed that when athletes perceived their coach as having an

autonomy-supportive coaching style, the more their motivation for practicing their sport was self-determined (Vallerand et al., 2010). Self-determined motivation influences and promotes athletes' situational self-determined motivation before competition, which in turn, predicts their sport performance (Vallerand et al., 2010). These results are consistent with previous research (Hollebeak & Amorose, 2005; Sheldon & Watson, 2011; Allen & Shaw, 2009; and Banack, Sabiston, & Bloom, 2010) identifying perceived coaching behavior as a key component to self-determined forms of motivation. The HMIEM model contributes to the importance of identifying key behaviors that promote and enhance intrinsic motivation. Further, the model produced an interest in situational context increasing self-determined forms of motivation among athletes.

#### *Situational Self-Determined Motivation*

The HMIEM model has been used to evaluate motivation and motivational outcomes, and the results within this research (Vallerand et al., 2010) provide support for a top-down effect between contextual motivation and situational motivation. Situational self-determined motivation is produced through at least three different types of variables: the task, the environment, and individual differences (Vallerand, 2004). Vallerand suggested that tasks tend to differ in conjunction with their intrinsic properties, specifically certain tasks are more enjoyable than others. For example, playing volleyball would be more interesting to most volleyball players in comparison to running laps around the track. With that being said, individual differences and environmental factors could affect perceptions of different tasks (Vallerand, 2004). Research has shown that factors such as winning, competition, performance, or losing affect situational

motivation. Further, competing to win at any cost, as well as the alternative of losing or not playing well, generally produces a decrease in intrinsic motivation and identified regulation, increasing introjected and external regulation (Vallerand, 2004). Perception of competition can be influenced by the social environment created by different coach and team dynamics. According to SDT, social factors have an impact on motivation through their influence on individual perceptions of competence, relatedness, and autonomy. Social factors such as coaching behaviors and team dynamics impact athlete needs satisfaction, which in turn impacts motivation. Coaching behavior influences the situation and context of the task or sport, therefore, contributes to potential situational self-determined motivation. Environmental situational factors such as performing badly in a sport setting leads an athlete to feel incompetent, which in turn reduces intrinsic motivation and identified regulation.

Research has shown that the impact made by environmental factors on motivation is mediated by perceptions of needs satisfaction (Vallerand, 2004). Individual differences influence everything, specifically orientation to a task or situation. For example, an athlete with intrinsic contextual motivation toward football is more predisposed to display greater levels of intrinsic motivation in various football situations than an athlete with a low contextual motivation (Vallerand, 2004). Situational motivation is important as the effects appear to hold true for contextual motivational orientations related to a specific activity in which an athlete is engaged. Therefore, a passionate basketball player would perceive more self-determined motivation from a basketball related task, allowing them to maintain a greater level of situational intrinsic motivation toward basketball. This

idea illustrates that situational self-determined motivation is a strong and positive predictor of athletes self-determined motivation toward their sport activity or competition. This can be interpreted to mean that the more self-determined an individual's motivation is in a specific situation, the more self-determined they will be in a setting relevant to their sport. Contextual self-determined motivation can be a strong and positive predictor of athletes' performance during competition. These results support the idea that situational and contextual self-determined motivation are a positive predictor of intrinsic motivation, which in turn relates to athletes' performance. Social and environmental factors involved in situational and contextual motivation can be affected by coaching behaviors, generating a need to examine specific coaching behaviors that contribute to higher forms of self-determined motivation.

### **Coaching Behavior and Sport Climate**

The coach has been identified as a significant social influence within the sport environment. At all competitive levels, the way in which coaches establish a structure for practice and game situations, the processes in which they make decisions, the quality and quantity of feedback they give to athletes, the relationships they build with athletes, the way in which they motivate their players, can all have an effect on an athlete's motivation, affective responses, cognition, and performance (Amorose & Anderson-Butcher, 2015; Horn, 2002; Smoll & Smith, 2002). A coach's behavior can influence whether an athlete enjoys the experience, learns at a high level, and demonstrates high effort and persistence within the sport (Vallerand & Maggeau, 2003). In addition, coaches influence an athlete's development of competence, relatedness, and a self-

determined motivational orientation (Amorose & Anderson-Butcher, 2015; Vallerand & Maggeau, 2003). In contrast, coaching behavior can also lead to negative achievement, experience, and psychological outcomes (burnout, poor performance, low self-esteem, low levels of sport competence, a feeling of un-relatedness (Vallerand & Maggeau, 2003). Coaches significantly impact the sport environment, and demonstrate the power to generate athlete motivation within this controlled climate. According to Horn (2002) and Smoll and Smith (2002), the coach is considered a powerful socializing agent at all levels in the physical area of sport, and this influential power makes it important to establish an understanding of coaching behavior. Coaches influence the establishment and fulfillment of the three basic psychological needs (competence, relatedness, and autonomy) within the self-determination theory, and these needs create an important continuum. All three psychological needs are essential and important to athlete motivation, indicating the need to include all three within this paper and study. However, for coaching behavior, the study will focus on autonomy-supportive coaching behavior. When thinking about the influence coaches have on the sport environment, an important question to address is: what coaching behaviors promote high levels of motivation, performance, and achievement, and what behaviors facilitate athletes' psychological needs and well-being (Hagger & Chatzisarantis, 2007)?

### *Controlling Coaching Behavior*

A specific type of coaching style that is relevant to athlete needs satisfaction and motivation is controlling coaching behavior. Controlling coaching behaviors includes the use of authoritarian and pressuring styles, hindering more autonomous motivation (Deci

& Ryan, 1985). In conjunction with SDT, controlling coaching behaviors should impair autonomous styles of motivation and promote controlling forms because controlling forms fail to fulfill the basic psychological needs, including perceived competence and autonomy (Matosic, Cox, & Amorose, 2014; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). Researchers have supported this perception in sport, showing that perceptions of controlling coaching behavior relate positively to more extrinsic forms of motivation and negatively to self-determined motivation as well as to needs satisfaction (Matosic, Cox, & Amorose, 2014). Controlling coaching behavior varies and can be skewed to seem autonomous. These behaviors can include providing rewards, intimidation, ignoring the athlete, and personal control to promote motivation and performance. These behaviors are linked to needs satisfaction and motivation, much like all coaching styles. As pointed out by Bartholomew and colleagues (2010, 2011), controlling coaching behaviors are not on the opposite end of a continuum from autonomy-supportive behaviors. From the athlete's perspective, coaches can use both controlling and autonomy-supportive coaching behaviors when interacting with athletes. In support of this argument and research, it is important to look at both controlling and autonomy-supportive coaching styles. With that being said, it is also important to research the development of autonomy-supportive coaching behavior.

#### *Top Down Autonomy Support*

Many studies focus solely on autonomous behavior exhibited by coaches (Sheldon & Watson, 2011; Allen & Shaw, 2009; Banack, Sabiston, & Bloom, 2010), however, it is important to acknowledge that autonomy support is a top-down system.

Coaches are more likely to create an autonomy-supportive climate, if they feel autonomy support from their organization. Allen and Shaw (2009) provide a different outlook on autonomy support behavior, and they reveal the importance of the top down system. In their article, they examine high performance women coaches' perceptions of their organization's social context, specifically looking at psychological needs satisfaction. SDT was used to examine the coach's experiences through semi structured interviews (Allen & Shaw, 2009). Each of the eight coaches within the study reported that they personally experienced autonomy and competence development opportunities. It was found that support from their personal organization or school impacted the coaching climate; the establishment of autonomy support behavior from the organization/school provided the coach a feeling of safety, and met the psychological need of the coach. If coaches feel a sense of autonomy, they are more likely to create a sport climate that is autonomy-supportive and democratic (Allen & Shaw, 2009). The top down effect influences a coach's autonomy supportive behavior, which in turn, undermines or supports athletes' basic psychological needs. The article insinuates that the more autonomy support coaches feels from their perspective organization could generate the potential for the coach to have autonomy supportive behavior to the athletes.

### *Transformational Coaching*

Transformational leadership/coaching can be defined as showing care and concern for athletes, being a role-model, and inspiring athletes to achieve challenging goals; the idea of a transformational coach could be considered synonymous with coaching autonomy support. Charbonneau and colleagues (2001) researched the

relationship between transformational coaching, intrinsic motivation, and performance. Their study proposed that intrinsic motivation mediates the relationship between transformational coaching and athlete performance (Charbonneau, Barling, & Kelloway., 2001). In previous research (Sheldon & Watson, 2011; Amorose & Anderson-Butcher, 2007; Pelletier et al., 2001; Vallerand et al., 2010), the focus was solely on coach autonomy support creating intrinsic motivation, however, this research includes transformational coaching/leadership as being a determinant of athlete motivation, impacting performance. Charbonneau and colleagues (2001) developed a model looking at transformational leadership and the affects it has on sports performance, through the mediating effects of intrinsic or self-determined motivation. The study consisted of collecting data during a full season with 168 university athletes, and the data looked at perceived transformational leadership among coaches and athlete intrinsic motivation (Charbonneau et al., 2001). The data was measured using a sequence of mediator tests outlined by Kelloway (1996, 1998). The results revealed intrinsic motivation as a mediator of transformational leadership and sports performance, suggesting that this type of coaching behavior may promote and enhance intrinsic interest within the sport or task (Charbonneau et al., 2001). According to the results, the transformational leadership model gained considerable support. Charbonneau and colleagues' research, as well as previous research, demonstrated that transformational coaching is associated with an increase in motivation in specific sport settings. Transformational leaders use autonomy-supportive behaviors to promote self-determined motivation, rather than using autocratic or controlling behaviors.

### *Coaching Autonomy Support*

Autonomy supportive coaching behavior is considered to be the acknowledgement of athletes' feelings and different perspectives; in addition to, allowing athletes to be involved in the decision making process creating a democratic sport environment (Vallerand et al., 2010). It is important for athletes to feel a sense of control over their own decisions and behaviors, and this fulfills a human psychological need of autonomy. Several studies (Amorose & Anderson-Butcher, 2007; Pelletier et al., 2001; Conroy & Coatsworth, 2007) have evaluated the motivational impact perceived coaching style has on athletes. Amorose and Anderson-Butcher (2007) used the SDT framework to test whether perceived needs satisfaction mediated the relationship between perceived autonomy-supportive coaching and athlete motivation. They found that the structural equation modeling supported a mediational effect (Amorose & Anderson-Butcher, 2007). Specifically, the results indicated that athletes' perception of an autonomy-supportive coaching environment/style predicted athletes' perceived autonomy, competence, and sense of relatedness, which in turn, predicted self-determined motivation (Amorose & Anderson-Butcher, 2007). These findings support SDT — specifically, when the social environment is autonomy-supportive, athletes are motivated to internalize the importance of sport (Pelletier et al., 2001). Pelletier and colleagues (2001) used SDT to examine associations with perceived autonomy support, self-regulation, and persistence. Using a prospective 3-wave design with competitive swimmers they found that perceived autonomy-supportive coaching behaviors promoted greater levels of self-determined motivation (Pelletier et al., 2001). Results among these studies reveal that autonomy

supportive coaching behaviors promote self-determined motivation in athletes, and in contrast, controlling coaching behaviors negatively impact self-determined motivation in athletes. Research has shown that perceived coaching autonomy creates motivation among athletes, specifically among Paralympic athletes (Banack, Sabiston & Bloom, 2011). In this study, one hundred thirteen Canadian Paralympic athletes were recruited to complete an online survey, consisting of measures of perceived autonomy, competence, and relatedness; intrinsic motivation; and coach autonomy support (Banack, Sabiston & Bloom, 2011). The study postulated two important questions: does perceived coaching autonomy predict athletes' perceptions of autonomy while promoting motivation, and does perceived competence predict intrinsic or self-determined motivation. Athlete participants who perceived their coaches' behavior to be autonomy supportive reported more self-determined forms of motivation (Banack, Sabiston & Bloom, 2011). Further, perceived autonomy-supportive coaching behavior was a predictor of athletes' perception of relatedness and autonomy (Banack, Sabiston & Bloom, 2011). The study also revealed the importance of perceived competence, as it was a significant predictor of all forms of intrinsic motivation. Athletes' perceptions of coaches' autonomy and competence were found to be a predictor of intrinsic motivation, and furthermore, perceived coaching support was significantly related to perceived autonomy and support.

### **Coaching Autonomy Support with Collegiate Athletes**

Collegiate athletes are typically considered to be extrinsically motivated by money, awards, and guilt, however, studies such as Sheldon and Watson (2011) discovered something different in their research. Varsity athletes tend to face greater

performance pressure, therefore, autonomy supportive coaching behavior has been presumed as unimportant to collegiate athletes. Specifically, they surveyed 264 student athletes, including 141 recreational athletes, 83 club sport athletes, and 40 varsity athletes, all playing on sports teams at a public university within the US (Sheldon & Watson, 2011). The surveys looked at autonomy supportive coaching behavior, which measured motivation among athletes. The study showed that varsity athletes tended to be motivated by external forces, such as rewards and punishment, and scored low in intrinsic motivation. However, in conjunction with SDT, findings also showed that coaches autonomy-supportive behavior predicted intrinsic and identified motivation in all athletes (Sheldon & Watson, 2011). This research shows the variation within different levels of competition. Elite-level coaches should make an exceptional effort to create an autonomy-supportive environment with their athletes (Sheldon & Watson, 2011). The overall findings of the study were consistent with other research (Allen & Shaw, 2009; Banack, Sabiston & Bloom, 2011) -- coaches' autonomy supportive behavior predicted intrinsic motivation in all athletes. Coaches autonomy support was a strong predictor of intrinsic motivation among varsity athletes versus recreational athletes (Sheldon & Watson, 2011). In other words, autonomy supportive behavior is a strong predictor and suggest causation of intrinsic motivation among all levels of athletes, and the coach's behavior can be considered an influence on athlete motivation.

### **Coaching Autonomy Support with Youth Athletes**

In contrast with collegiate athletes, youth athletes are typically considered to be intrinsically motivated by fun, value, and friends. Research has revealed that perceived

teacher/instructor autonomy-supportive behavior in physical exercise (PE) classes to be positively related with physical activity engagement as a result of fostering more self-determined forms of motivation (Chatzisarantis & Hagger, 2009). Following this line of research, Fenton and colleagues used an SDT framework to extend previous findings from the PE context to youth outside the school environment. This study examined coach autonomy-supportive behavior as a predictor of self-determined motivation in youth sport participants (Fenton et al., 2014). They worked with youth football players around 12 years of age ( $\pm 1.85$  years) examining coaching behavior and athlete motivation for sport engagement using multi-section questionnaires looking at perceived autonomy-supportive coaching behavior, controlling coaching behavior, sport engagement motivation, physical activity, and sedentary time (Fenton et al., 2014). The study found that perceived autonomy-supportive coaching behavior positively predicted higher forms of self-determined motivation for sport engagement. Further, perceived controlling coaching behavior were positively related to controlled motivation, but unrelated to self-determined motivation. These findings show us that coaching behavior has an effect on youth athlete motivation in sport engagement, eliciting a multi-faceted purpose to further explore the relationship between coaching behavior, athlete needs satisfaction and motivation. Further research was completed examining needs satisfaction, mastery climate and self-determined motivation. Ommundsen and colleagues (2010) worked with youth soccer players around the age of 13. The research yielded results suggesting that mastery climate and needs satisfaction positively related to higher forms of self-determined motivation. Further, the study found that satisfaction of all three needs

significantly and partially mediated the relationship between a mastery climate and intrinsic motivation. The literature implicates autonomy-supportive coaching behavior as a strong predictor of self-determined motivation among youth athletes as well as collegiate athletes. Additionally, the research suggests that coaching behavior is a predictor of athlete needs satisfaction, which in turn promotes and predicts motivation.

### **Coaching Climate Affects Motivation**

Coaches promote adaptive styles of motivation to foster psychological well-being, sport participation, and sport performance. Coaches often focus on the level of motivation, the assumption being that the more motivation will result in better performance, however, the self-determination theory promotes and distinguishes the quality of motivation. Motivation research has proven that the level of motivation does not yield desirable outcomes if the quality of motivation is low or poor (Amorose & Anderson-Butcher, 2007, 2015). The coaching climate influences the quality of motivation among athletes in the sport environment. Autonomy-supportive behaviors have often been shown in research to predict satisfaction of not just autonomy, but all three of the psychological needs (autonomy, relatedness, and competence), as well as self-determined motivation (Amorose & Anderson-Butcher, 2007, 2015; Matosic, Cox & Amorose, 2014). An autonomy-supportive coaching climate does not promote athlete independence from their coach, but instead, it promotes an environment/climate that aims at helping athletes develop responsibility for their own behaviors (Papaionnou & Hackfort, 2014). In addition, an autonomy-supportive coaching climate offers emotional support to athletes, and creates an open environment for advice and guidance. Self-

determination theory literature has provided numerous suggestions for coaches that promote needs satisfaction and self-determined motivation. It is important to note that these suggestions focus on the development of an autonomy-supportive coaching climate and the reduction of controlling behaviors. An autonomy-supportive coaching climate promotes self-determined motivation.

### **Coaching Behaviors that Promote an Autonomy-Supportive Climate**

Self-determination theory research shows that there are specific coaching behaviors that promote an autonomy-supportive climate, which predicts self-determined motivation. The self-determination theory literature and research established several suggestions for coaches that promote self-determined motivation, and the main suggestions were provision of choice and decision making, feedback, and empathy (Papaionnou & Hackfort, 2014). One of the central ideas of an autonomy-supportive climate, is the promotion and provision of choice. It is important for athletes to feel as if they have choice in their own behavior, therefore, coaches should provide a choice in sport activities to create positive engagement among athletes. In addition, athletes should be encouraged to provide input into strategies and tactics of their sport. In providing athletes the opportunity to give input, coaches are demonstrating that they value athletes' opinions and encourage team problem solving (Vallerand, 2007). The promotion of choice and encouragement of contribution by coaches creates an autonomy-supportive climate within the sport environment. Furthermore, coaches should also provide positive, constructive and informative feedback to athletes when it is needed. Providing feedback meets the psychological need of competence development within athletes. It is important

for coaches to provide feedback to athletes, however, it is also beneficial for coaches to take the time to listen and then respond to athletes' ideas or goals, and it is even more important for coaches to be patient with athlete progression and growth. Patience within a coach builds trust and encouragement in the sport environment. Feedback and patience gives athletes the opportunity to develop competence in sport, and this builds an autonomy-supportive climate.

Coaches should also be empathetic -- they need to acknowledge the difficulties and possible negative associations with particular tasks, rules, or goals. Expressions of frustration or boredom should not be dismissed or discouraged, but instead encouraged and understood. Allowing athletes, the opportunity to share their feelings of dissatisfaction, shows that the coach values athlete's' voices and opinions. The athlete is given the opportunity to provide criticism, and in turn, an ability to create more choices and ideas to address the criticisms. These suggested coaching behaviors facilitate psychological-needs satisfaction and self-determined motivation by reducing controlling behaviors and promoting autonomy-supportive behaviors. An autonomy-supportive coaching climate creates self-determined motivation within athletes due to the facilitation of psychological needs. The coaching climate that the individual coach creates directly correlates with intrinsic motivation, and in turn, athlete performance.

### **Summary**

The coach is one of the most significant social factors within the sport environment. Coaches' behavior influences the sport climate, which sets the motivational tone within a sport. Research suggests that coaching style influences athlete need

satisfaction, motivation, and performance. The literature shows that positive coaching behavior promotes basic needs satisfaction: competence, relatedness, and autonomy, which directly influences self-determined motivation within athletes. An autonomy-supportive coaching climate satisfies three of the basic human needs proposed in the self-determination theory -- autonomy, relatedness, and competence. Coach autonomy-supportive behavior provides athletes with the choice to make their own decisions, and the ability to share their opinions with the coach. These behaviors promote trust and communication among athletes and coaches, which creates a supportive environment. In addition, an autonomy-supportive climate allows athletes to receive positive and constructive feedback from their coach, and in turn, creates an open relationship between the coach and the athlete. Through the reception of feedback, athletes are fulfilling their psychological need of competency. Finally, the autonomy-supportive coaching climate emphasizing empathy from coaches, allowing athletes to be dissatisfied with a task, and provides an opportunity for new ideas from the athletes. Empathy creates a sense of relatedness and allows the athlete to feel respected and valued.

In contrast, controlling coaching behavior relates to more extrinsic motivation as well as lower needs satisfaction, and in turn, negatively relates to self-determined motivation. It is important to establish the link between both autonomy-supportive and controlling coaching behavior and self-determined motivation. An autonomy-supportive coaching climate fosters self-determined motivation within athletes due to the satisfaction of psychological needs. Although the literature shows a connection between coaching behavior and needs satisfaction, which in turn relates to motivation, there is minimal

research looking at needs satisfaction mediating the relationship between coaching behavior and the SDT motivation continuum. Most literature involves a single coaching behavior and form of motivation, without considering connections between autonomy-supportive and controlling coaching behavior and different forms of motivation. Literature and research suggests important connections among coaching behavior, needs satisfaction, and self-determined motivation, creating a need to look at the full picture — involving both coaching behavior styles, the three needs, and the SDT motivation continuum.

## CHAPTER III

### METHODS

The purpose of this study is to examine the relationship of autonomy-supportive and controlling coach behavior to athlete motivation, and to consider needs satisfaction as a potential mediator of that relationship. To address this purpose, high school athletes completed surveys assessing perceived coach behavior as well as self-determined motivation and needs satisfaction.

#### **Participants**

There were 162 overall participants within the study, however, five participant surveys had to be eliminated as they did not fully complete the survey. The final participant sample (n=157) included male (n=112; 69%) and female (n=50; 31%) athletes from eleven sport teams in the fall and winter sports, associated with three 1A high schools in the Western region of North Carolina. The eleven sports teams included seven sports: women's volleyball, men's soccer, men's football, cheerleading, women's basketball, men's basketball, and wrestling. Participants ranged in age from 13-18 years old; 8% of the athletes were 13 years old, 31% of the athletes were 15 years old, 24% of the athletes were 16 years old, 23.5% of the athletes were 17 years old, and 8% of the athletes were 18 years old. Aligning with the average age of the athlete participants, which was 15.92 years old, 17.9% of the athletes reported being freshmen; 34.6% reported being

sophomores; 25.3% reported being juniors; and 22.2% reported being seniors. A large portion of the athletes were Caucasian (149; 56.8%), however, 32.1% (n=52) of the athletes reported being Native American. Also, 2.5% (n=4) reported being African American and 0.06% (n=1) reported being Asian American. In a separate response, 7.4% of the athletes indicated that they are of Hispanic heritage. Athletes were also asked to report their playing status on the team; 54.3% reported being starters, 28.4% reported not starting but playing regularly, and 17.3% reported rarely playing.

## **Measures**

All measures were compiled into a survey. The survey included measures assessing coaching behavior, needs satisfaction and motivation. Each survey included a demographic form that was placed at the beginning. The participants were asked to provide basic demographic information including age, grade, gender, race/ethnicity, sport, team, school, and their individual playing status on the team. The main measures of perceived autonomy-supportive behavior, controlling coaching behavior, needs satisfaction, and motivation were then presented with the order of the four measures randomized among individuals. Additionally, items within the measures were also randomized.

### *Perceived Autonomy-Supportive Coaching Behaviors*

The perception of a coach's autonomy-supportive behavior was assessed using the Sport Climate Questionnaire (SCQ; Amorose & Anderson-Butcher, 2015). Internal consistency has been good across studies ( $\alpha=.95$ ), and in addition, the SCQ has been used in two studies examining the relationship between coaching behavior and needs

satisfaction and motivation (Amorose & Anderson-Butcher, 2007, 2015). Response options range from *strongly agree* to *strongly disagree*; the 15 items on the Questionnaire are scored on a 7-point scale with higher scores demonstrating more autonomy-supportive coaching behaviors. The SCQ items include, “I feel understood by my coach”; “I feel that my coach cares about me as a person”; “I feel that my coach provides me choices and options”. Research on a sample of high school and college athletes has shown that items assessing perceived autonomy-supportive coaching behavior are internally consistent ( $\alpha=.95$ ) and have construct validity (Amorose & Anderson-Butcher, 2007). The total of the 15 items on the SCQ perceived autonomy-supportive score is used as the score for analyses with item 13 reversed scored. Higher average scores indicate a higher level of perceived autonomy support. In this study, the SCQ assessing perceived autonomy-supportive coaching behavior was found to be internally consistent (.950 Cronbach’s alpha score on the 15-item scale).

#### *Perceived Controlling Coaching Behaviors*

Athletes’ perception of coaches’ controlling behaviors was evaluated using the Controlling Coach Behavior Scale (CCBS; Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010). The CCBS has demonstrated content and factorial validity, as well as invariance across gender and sport type and internal consistency (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010). The CCBS was also used by Amorose and Anderson-Butcher (2015), who found it to be reliable and valid. The scale includes 16 items evaluating four related aspects of controlling behaviors, including the controlling use of rewards (e.g., “My coach only rewards me to push me to perform better”),

negative interaction (e.g., “My coach ignores me when I perform poorly”), excessive personal control (e.g., “My coach monitors my actions during my free time”), and intimidation (e.g., “My coach intimidates me and yells at me to make me do what they want”). Response options range from *strongly agree* to *strongly disagree*, which are scored on a 7-point scale with higher scores indicating more controlling coaching behavior. The CCBS was totaled into one score. The greater the overall score the higher the perceived controlling coach behavior. In this study, the CCBS was found to have acceptable internal consistency ( $\alpha=.884$ ).

#### *Motivational Regulations*

The Behavioral Regulation in Sport Questionnaire (BRSQ) was used to assess athletes’ motivation (Lonsdale, Hodge, & Rose, 2008). The BRSQ was developed using expert review, interviews, and pilot testing. Lonsdale and colleagues (2008) conducted analyses that supported the test-retest reliability, internal consistency, and factorial validity of the BRSQ scores. Further, when directly compared with scores found from the Sport Motivation Scale (SMS; Pelletier, Fortier, Vallerand, Tuson & Blais, 1995) and an updated version of the SMS (SMS-6; Mallett, Kawabata, Newcombe, Otero-Forero & Jackson, 2007), BRSQ scores were found to have equal or superior reliability measures and factorial validity (Lonsdale, Hodge & Rose, 2008). The BRSQ includes 6 subscales: intrinsic motivation, integrated motivation, identified motivation, introjected motivation, external regulation, and amotivation. The BRSQ includes 24 items assessing the 6 subscales on the motivation continuum; intrinsic (e.g., “because I enjoy it”), integrated regulation (e.g. “I am allowed to be myself”), identified regulation (e.g., “because I think

the benefits of my sport are valuable”), introjected regulation (e.g. “I would be embarrassed if I quit”), external regulation (e.g., “I play because my friends pressure me to play”), and amotivation (e.g. “what is the point”). Response options ranged from *very true* to *not true at all*, and the responses were scored on a 7-point scale with high scores showing greater levels of the motive for participating in sport. The BRSQ yields scores for each of the 6 types of self-determined motivation. In their study, internal consistency was good for 5 out of the 6 subscales (alpha values are indicated in the results section, Table 1), however, the integrated regulation subscale reliability proved to be lower than anticipated ( $\alpha=.627$ ). Item two on the BRSQ (question one in the integrated regulation subscale was stated as “because it is a part of who I am”), was deleted and alpha increased to an acceptable level ( $\alpha=.788$ ). Therefore, that item was removed for this study and the total of the other three items was used in all analyses.

### *Needs Satisfaction*

Athletes’ basic psychological needs were assessed using the Basic Needs Satisfaction in Sport Scale (BNSSS; Ng, Lonsdale, & Hodge, 2011). The BNSSS includes 15 items evaluating the three needs satisfaction factors (autonomy, competence, and relatedness). Participants were asked to reply to the items using a 7-point Likert scale (1= “not true at all”; 7= “very true”) and to complete the survey with reference to their individual sport. The BNSSS also includes scales for volition, and internal perceived locus of causality, which were not used in this study. Questions included “I can overcome challenges in my sport” (competence), “in my sport, I get opportunities to make decisions” (autonomy), and “in my sport, I feel close to other people” (relatedness). The

total scores of competence, choice (autonomy), and relatedness were used to measure athlete needs satisfaction. Higher subscale scores indicated greater needs satisfaction. In support of Ng, Lonsdale, and Hodge (2011), the BNSS subscales used in this study have acceptable internal consistency (see Table 1).

### **Procedures**

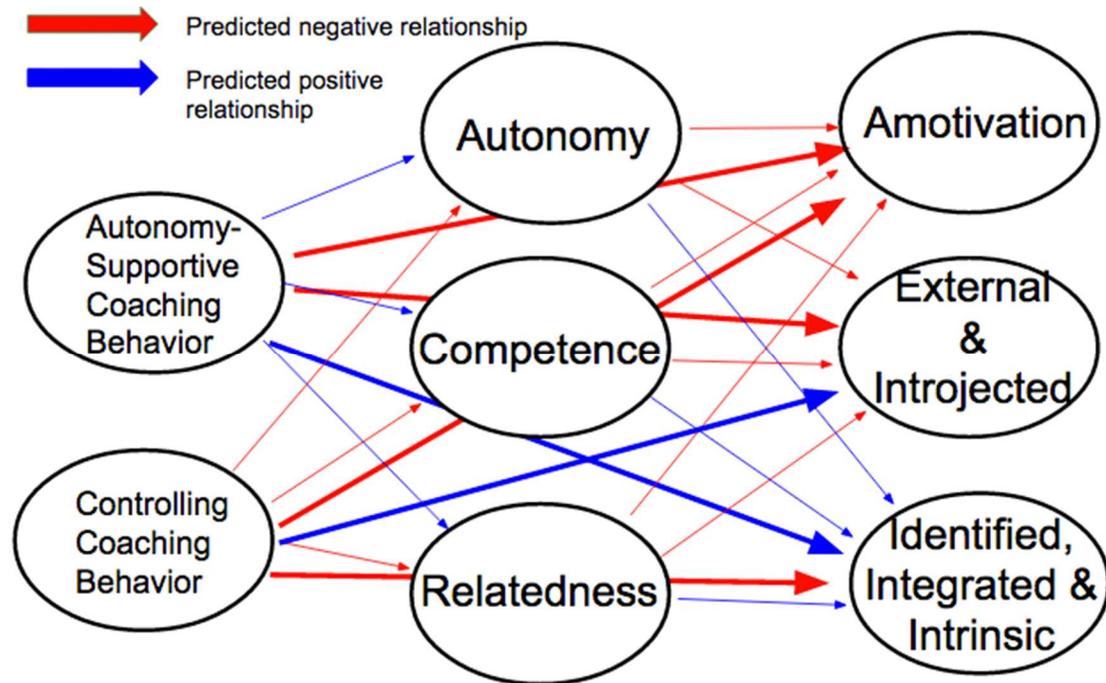
After receiving administrator approval from the schools' superintendents and the University of North Carolina at Greensboro Institutional Review Board approval, the researcher visited several high schools in Western, North Carolina to recruit athletes from multiple sports teams. During that visit, athletes under the age of 18 received a parent permission form while athletes above the age of 18 received adult consent forms. The parent permission forms were returned to the respective coach in a sealed envelope. The envelopes were given to the athletic director, who stored them in a locked cabinet drawer until they were picked up by the researcher. In accordance with approved Institutional Review Board procedures, assent forms were gathered from underage athletes before the beginning of the study. The data were collected at the team's practice facility before a regularly scheduled practice session near the end of the athlete's competitive season (i.e., approximately 2-4 weeks before the last official competition). Total time of the data collection took no more than 25 minutes. Participants were asked to voluntarily complete the survey and given as much time as needed. The athletes were told that their answers are confidential and will remain confidential; their coaches were not allowed in the area while athletes took the survey and they did not have access to any answers provided on the questionnaires.

## **Analysis**

Following basic descriptive analyses, the main research questions were addressed with correlational and regression analyses. To examine hypothesis one, the first step in examining the model was to evaluate the relationship of the two coaching behaviors with motivation. To examine hypothesis two, the first step was to evaluate the relationship of autonomy-supportive and controlling coaching behavior with needs satisfaction. Both correlational and multiple regression analyses were used to assess the relationships between autonomy and controlling coaching behaviors and each of the three needs satisfaction scores from the BNSSS. In hypothesis three, correlational and multiple regression analyses were used to assess the relationships between needs satisfaction and athlete motivation. Stepwise multiple regression was used to examine the relationship of the three scores from the BNSSS with each of the 6 scores from the BRSQ.

Relative to hypothesis four, regression analyses were used to assess the potential mediation of needs satisfaction for the relationships between coaching behavior and athlete motivation. The mediation analyses followed the Baron and Kenny model (1986). The first two steps of the model involved the relationships between coaching behavior and motivation and between coaching behavior and needs satisfaction. Based upon those results, mediation was examined with both coaching behavior and needs satisfaction predicting motivation in a multiple regression for steps three and four. Autonomy-supportive coaching behavior was significantly related to all three needs and the higher forms of self-determined motivation (intrinsic, integrated, and identified motivation), therefore, only these relationships were tested for mediation.

Figure 1. Coaching Behavior and Motivation Model



Hypothesis 1: Coaching behavior is related to motivation.

Hypothesis 2: Coaching behavior is related to needs satisfaction.

Hypothesis 3: Needs satisfaction is related to motivation.

Hypothesis 4: Needs satisfaction mediates the relationship between coaching behavior and motivation.

## CHAPTER IV

### RESULTS

#### **Preliminary Analyses**

There were a total of 162 participants within the study; 157 (97%) participants completed all measures in the survey -- the SCQ, CCBS, BRSQ, and BNSS, and were used in analyses. The internal consistency estimates ( $\alpha$ ) for all of the measures used ranged from .788 to .95, indicating sufficient reliability. The total mean scores of the 15 items on the SCQ ( $M= 81.68$ ) indicated high values of perceived autonomy coaching behavior (see Table 1). The item mean scores of the SCQ and CCB (potential range of scores was 1 -7), showed that the athletes perceived their coaches as being moderate to high in autonomy-supportive behaviors ( $M= 5.47$ ) and relatively low in controlling coaching behaviors ( $M=2.87$ ). Mean scores also revealed that the athletes reported relatively positive motivational outlooks with the higher forms of self-determined motivation (i.e., intrinsic, integrated, and identified) and needs satisfaction (i.e., perceived competence, autonomy, and relatedness) all showing scores above the midpoint of their respective scales. The scores on the less self-determined forms of motivation (introjected, external, and amotivation) were all below the midpoint of the scale.

Table 1					
Descriptive Analyses					
<u>Scale</u>	<u>Total Mean</u>	<u>SD</u>	<u><math>\alpha</math></u>	<u># of items</u>	<u>Item Mean</u>
SCQ Scale	81.68	18.71	.95	15	5.47
CCB Scale	45.98	17.55	.88	16	2.87
Autonomy Scale	19.03	6.08	.86	4	4.76
Competence Scale	28.67	6.00	.90	5	5.74
Relatedness Scale	29.52	6.02	.86	5	5.9
IM Scale	18.64	3.1	.81	3	6.21
*IR Revised Scale	16.96	3.94	.83	3	5.65
IDR Scale	23.49	4.86	.79	4	5.87
Intro Scale	16.84	7.7	.83	4	4.21
ER Scale	13.1	6.95	.81	4	3.27
AM Scale	10.82	7.22	.89	4	2.16

*Note:* SCQ is Autonomy-Supportive Coaching Behavior, CCB is Controlling Coaching Behavior, IM is Intrinsic Motivation, IR is Integrated Regulation, IDR is Identified Regulation, INTRO is Introjected Regulation, ER is External Regulation, and AM is Amotivation.

\*Item one on the original IR Scale was eliminated from the four item scale to increase internal consistency

## Main Analyses

### *Coaching Behavior Predicting Motivation (Hypotheses 1a and 1b)*

The first hypothesis examined in this study was the relationship between coaching behavior and athlete motivation. The first step in assessing this connection was bivariate correlations between the two coaching behaviors and six motivation scores. Perceived

autonomy-supportive coaching behaviors positively and significantly correlated with the higher forms of self-determined motivation (intrinsic motivation, integrated, and identified regulation) as seen in Table 2. Neither coach behavior correlated with introjected motivation. Autonomy-supportive coaching behavior was negatively and significantly related to amotivation. Controlling coaching behavior was significantly and positively correlated with both external regulation and amotivation (see Table 2).

Table 2						
Coaching Behavior Predicting Motivation						
<u>SCALE</u>	<u>IM</u>	<u>IRRevised</u>	<u>IDR</u>	<u>Intro</u>	<u>ER</u>	<u>AM</u>
SCQ	.463**	.512**	.558**	.050	-.107	-.407**
CCBS	-.155	-.006	-.088	.151	.411**	.279**
** Correlation is significant at the .01 level (2-tailed).						
* Correlation is significant at the .05 level (2-tailed).						

Multiple regressions were performed to assess the relative contributions of autonomy and controlling coaching behaviors to the prediction of the six motivational regulations. The multiple regression was significant for all of the motivational regulations (F-test statistical information is shown in Table 3). Table 3 shows the final multiple regression and the beta weights for the two predictors. Only autonomy-supportive coaching behavior predicted both integrated and identified regulation. In contrast, only controlling coach behavior predicted introjected and external regulation. Autonomy-supportive coaching behavior negatively predicted amotivation, whereas, controlling coach behavior, although positively correlated, did not add significantly.

Table 3		
Multiple Regression for Coaching Behavior Predicting Motivation		
Coaching Behavior Predicting Intrinsic Motivation		
<u>SCALE</u>	<u>Beta</u>	<u>T</u>
SCQ	.468	6.1***
CCBS	.061	0.76
R=.464, R <sup>2</sup> = .215, F (2, 151) = 20.67, p<.001		
Coaching Behavior Predicting Integrated Regulation		
<u>Scale</u>	<u>Beta</u>	<u>T</u>
SCQ	0.629	8.5***
CCBS	0.281	3.8***
R=.569, R <sup>2</sup> =.324, F (2, 151) =36.15, p<.001		
Coaching Behavior Predicting Identified Regulation		
<u>Scale</u>	<u>Beta</u>	<u>T</u>
SCQ	0.640	8.69***
CCBS	0.193	2.62**
R=.583, R <sup>2</sup> =.340, F (2,150) = 38.58, p<.001		
Coaching Behavior Predicting Introjected Regulation		
<u>Scale</u>	<u>Beta</u>	<u>T</u>
SCQ	0.146	1.65
CCBS	0.208	2.34*
R=.195, R <sup>2</sup> =.038, F (2, 150) = 2.978, p<.001		

Coaching Behavior Predicting External Regulation		
<u>Scale</u>	<u>Beta</u>	<u>T</u>
SCQ	0.082	0.99
CCBS	0.427	5.13***
R=.398, R <sup>2</sup> = .158, F (2, 150) = 14.113, p<.001		
Coaching Behavior Predicting Amotivation		
<u>Scale</u>	<u>Beta</u>	<u>T</u>
SCQ	-.365	-4.47***
CCBS	0.117	1.43
R=.429, R <sup>2</sup> = .184, F (2, 150) =16.91, p<.001		
*** t value is significant at the .001 level (2-tailed).		
** t value is significant at the .01 level (2-tailed).		
* t value is significant at the .05 level (2-tailed).		

*Coaching Behavior Related to Needs Satisfaction (Hypotheses 2a and 2b)*

Table 4 presents the bivariate correlations between the two coaching behaviors and the three needs satisfaction scores of the athletes. Perceived autonomy-supportive coaching behaviors positively and significantly related to all three needs satisfaction scores, whereas perceived controlling coaching behaviors were negatively related, but not statistically significant.

Table 4			
Correlations Between Coaching Behavior and Needs Satisfaction			
<u>SCALE</u>	<u>Competence</u>	<u>Autonomy</u>	<u>Relatedness</u>
SCQ Scale	.479**	.583**	.582**
CCBS	-.068	-.162	-.153
** Correlation is significant at the .001 level (2-tailed).			
* Correlation is significant at the .005 level (2-tailed).			

As with motivation analyses, additional multiple regression analyses were run with both coaching behaviors as predictors of needs satisfaction. Analyses indicated that only autonomy-supportive coaching behavior positively predicted all three needs satisfaction scores (see Table A10 in Appendix B). Controlling coaching behavior did not add significantly to the prediction of any measures of athlete needs satisfaction.

*Needs Satisfaction Predicts Motivation (Hypotheses 3a and 3b)*

Table 5 presents the bivariate correlations between the three needs satisfaction and the six motivational responses of the athletes. All three need satisfaction scores were positively and significantly correlated with the more self-determined forms of motivation (intrinsic, integrated, and identified). None of the three needs were significantly related to introjected regulation. Only relatedness had a significant negative correlation with external regulation. All three needs were significantly negatively correlated with amotivation.

Table 5						
Needs Satisfaction Predicting Motivation						
<u>SCALE</u>	<u>IM</u>	<u>IRRevised</u>	<u>IDR</u>	<u>Intro</u>	<u>ER</u>	<u>AM</u>
Competence	.485**	.587**	.534**	.060	-.011	-.343**
Autonomy	.520**	.578**	.540**	.091	-.029	-.399**
Relatedness	.370**	.520**	.556**	.005	-.205**	-.376**
** Correlation is significant at the .001 level (2-tailed).						
* Correlation is significant at the .01 level (2-tailed).						

Stepwise multiple regressions were run to determine the relative contribution of the three needs to motivation scores. Stepwise regressions indicated that both autonomy and competence were positively predictive of intrinsic motivation; autonomy entered first, but competence also added to the prediction. Stepwise results for integrated regulation were similar, but competence entered first followed by autonomy, and relatedness also added. Identified regulation was predicted by all three needs satisfactions – relatedness entered first followed by competence and autonomy. Only relatedness predicted external regulation. For amotivation, autonomy entered first followed by relatedness (see Table A11 in Appendix B).

*Does Needs Satisfaction Mediate the Relationship Between Coach Behavior and Motivation?*

To determine whether needs satisfaction mediated the coach behavior and motivation relationship, Baron and Kenny’s (1986) four-step approach with multiple regression analyses were used. The first step was to assess the relationship between

coaching behavior and athlete motivation (hypothesis 1). As shown previously in Table 2, autonomy-supportive coaching behavior positively related to intrinsic, integrated, and identified motivation, and controlling coaching behaviors were positively related to external regulation. The second step evaluated the effect of coaching behavior on needs satisfaction (hypothesis 2). The results from this step (see Table 4) indicated that autonomy-supportive coaching behavior was positively related to all three needs, and controlling coaching behavior was not related to any of the three needs. Because controlling coaching behavior was not predictive of needs satisfaction, mediation was not examined for controlling coaching behavior.

Further, only the psychological needs that were significantly related to both autonomy-supportive coaching behavior (hypothesis 2) and motivational outcomes (hypothesis 3) were evaluated as potential mediators in subsequent analyses.

The role of needs satisfaction as a potential mediator (hypothesis 4) of the relationship between autonomy-supportive coaching behavior and self-determined motivation (e.g., intrinsic, integrated, and identified) was examined through several multiple regressions. Specifically, for each multiple regression, steps 3 and 4 of the Baron-Kenny approach were estimated in the same equation, controlling for the effects of autonomy-supportive coaching behavior and each individual need on motivation.

### Intrinsic Motivation

Three separate regression analyses were used to examine possible mediating effects of each of the three needs on the relationship between autonomy-supportive coaching behavior and higher forms of self-determined motivation. First, with autonomy

needs as a mediator, autonomy needs satisfaction added to the prediction of intrinsic motivation (Table 6), and also was a stronger predictor than autonomy-supportive coaching behavior. However, autonomy-supportive coaching behavior was still positively predictive of intrinsic motivation, suggesting that autonomy needs satisfaction may partially mediate the relationship between autonomy-supportive coaching behavior and intrinsic motivation.

When considering competence as a mediator, both autonomy supportive coaching behavior and competence significantly predicted intrinsic motivation when controlling for each variable's effect. These results suggest that competence may also partially mediate the relationship between autonomy-supportive coaching behavior and intrinsic motivation.

For relatedness the beta coefficients indicated that relatedness did not add to the prediction of intrinsic motivation when controlling for coaching behavior. In accordance with Baron and Kenny's criterion, step three was not met; therefore, mediation was not concluded (Table 6). Relatedness does not appear to mediate the relationship between autonomy-supportive coaching behavior and intrinsic motivation.

Table 6		
Intrinsic Motivation Multiple Regressions		
	<u>Beta</u>	<u>T</u>
<u>Predictors</u>		
SCQ Total	.252	3.04**
Autonomy	.369	4.45***
R= .556, R <sup>2</sup> = .310, F (2, 155) = 34.75, p<.001		
<u>Predictors</u>		
SCQ Total	.310	4.06***
Competence	.332	4.35***
R= .554, R <sup>2</sup> = .306, F (2, 156) = 34.46, p<.001		
<u>Predictors</u>		
SCQ Total	.386	4.45***
Relatedness	.143	1.65
R= .484, R <sup>2</sup> = .235, F (2, 155) = 23.77, p<.001		
*** t value is significant at the .001 level (2-tailed).		
** t value is significant at the .01 level (2-tailed).		
* t value is significant at the .05 level (2-tailed).		

### Integrated Regulation

Three separate regression analyses were also used to examine the mediating effect of each of the three needs for integrated regulation. Autonomy needs satisfaction added beyond autonomy-supportive coaching behavior for the regression analysis and was the stronger predictor (Table 7). Autonomy-supportive coaching behavior still contributed significantly, suggesting that autonomy needs satisfaction partially mediates the coach behavior and motivation relationship. Similar results were found for competence and relatedness, suggesting that satisfying the need for competence and relatedness each

partially mediate the relationship between autonomy-supportive coaching behavior and integrated regulation.

Table 7		
Integrated Regulation Multiple Regressions		
	<u>Beta</u>	<u>t</u>
Predictors:		
SCQ Total	.276	3.51***
Autonomy	.413	5.27***
R= .618, R <sup>2</sup> = .381, F (2, 155) = 47.77, p<.001		
Predictors:		
SCQ Total	.310	4.43***
Competence	.433	6.18***
R= .644, R <sup>2</sup> = .415, F (2, 156) = 55.32, p<.001		
Predictors:		
SCQ Total	.323	4.02***
Relatedness	.335	4.17***
R= .587, R <sup>2</sup> = .344, F (2, 155) = 40.67		
*** t value is significant at the .001 level (2-tailed).		
** t value is significant at the .01 level (2-tailed).		
* t value is significant at the .05 level (2-tailed).		

### Identified Regulation

Results of the multiple regression analyses suggest that autonomy, competence, and relatedness may also partially mediate the relationship between coaching behavior and identified regulation (see Table 8). In each individual analysis, both autonomy-

supportive coaching behavior and each need were predictive of motivation when controlling for each variable's effect, which may suggest partial mediation.

Table 8		
Identified Regulation Multiple Regressions		
	<u>Beta</u>	<u>T</u>
<u>Predictors:</u>		
SCQ Total	.374	4.733**
Autonomy	.313	3.964**
R= .615, R <sup>2</sup> = .378, F (2, 155) = 47.13, p<.001		
<u>Predictors:</u>		
SCQ Total	.393	5.539**
Competence	.344	4.851**
R= .637, R <sup>2</sup> = .405, F (2, 156) = 53.15, p<.001		
<u>Predictors:</u>		
SCQ Total	.356	4.579**
Relatedness	.347	4.464**
R= .627, R <sup>2</sup> = .393, F (2, 155) = 50.20		
*** t value is significant at the .001 level (2-tailed).		
** t value is significant at the .01 level (2-tailed).		
* t value is significant at the .05 level (2-tailed).		

### Amotivation

For amotivation all three needs were found to be significant negative predictors in earlier results assessing hypothesis three. However, none of the three needs added beyond autonomy-supportive coaching behavior, indicating that there is no mediation of needs

satisfaction with the relationship between autonomy-supportive coaching behavior and amotivation.

### Summary

The regression analyses showed that the relationship between autonomy-supportive coaching behavior and motivation may be partially mediated by perceived needs satisfaction. Coaching behavior was a significant predictor of intrinsic motivation but autonomy and competence needs satisfaction may partially mediate the relationship. Additionally, autonomy, competence, and relatedness may each partially mediate the relationship between integrated and identified regulation, Autonomy-supportive coaching behavior was a significantly negative predictor of amotivation, but results did not suggest that needs satisfaction mediates the relationship.

The conclusions based on these results are that: a) perceptions of higher autonomy supportive coaching behaviors are directly and indirectly related to higher forms of self-determined motivation, whereas controlling behaviors are directly related to external regulation with no mediation, b) autonomy-supportive coaching behavior is positively and significantly related to needs satisfaction (autonomy, competence, and relatedness), c) needs satisfaction is related to higher forms of self-determined motivation (intrinsic, integrated, and identified), and d) needs satisfaction partially mediates the relationship between coaching behavior and motivational responses; specifically, needs satisfaction mediates the relationship between autonomy-supportive coaching behavior and higher forms of self-determined motivation.

## CHAPTER V

### DISCUSSION

The purpose of this study was to explore the relationship of autonomy-supportive and controlling coaching behaviors to athlete motivation, with a specific interest in examining needs satisfaction as a mediator of the relationship between coaching behavior and athlete motivation. It was expected that athletes' motivation would be more self-determined when relatively higher autonomy support was perceived and lower controlling behaviors were perceived, and it was expected that needs satisfaction would mediate those relationships. Perceived autonomy-supportive coaching behavior was hypothesized to predict needs satisfaction, and in contrast, perceived controlling coaching behavior was expected to negatively relate to needs satisfaction. Needs satisfaction was hypothesized to predict more self-determined forms of motivation (intrinsic, integrated, and identified). The results of the regression analyses provided moderate support for needs satisfaction mediating the relationship between coach autonomy support and more self-determined forms of motivation (intrinsic, integrated, and identified). However, controlling coach behavior directly predicted external regulation with no evidence of mediation.

Consistent with previous research (Bartholomew et al., 2011; Hollembek & Amorose, 2005; Pelletier et al., 2001), autonomy-supportive behaviors were related to higher forms of self-determined motivation, whereas perceived controlling behaviors

demonstrated a stronger impact on lower forms of self-determined motivation. In support of previous research (Amorose & Anderson-Butcher, 2015; Pelletier et al., 2001), autonomy-supportive coaching behavior was strongly predictive of the highest forms of self-determined motivation – intrinsic, integrated and identified motivation.

In contrast, controlling coaching behavior was strongly predictive of the more extrinsic forms motivation. As hypothesized, controlling coaching behavior positively predicts external regulation. Controlling coach behaviors also added to the prediction of integrated and identified motivation, although coach autonomy behavior was a stronger predictor.

In the proposed model, coaching behavior was hypothesized to predict needs satisfaction among athletes. As predicted, autonomy-supportive coaching behavior had a significant positive relationship with all three needs satisfactions. The regression coefficients and correlations all indicated a strong relationship between autonomy-supportive coaching behavior and needs satisfaction. It is interesting to note that controlling coaching behavior did not seem to have an effect on athlete needs satisfaction; therefore, no mediation analyses were conducted with controlling coaching behavior.

The relationships between athlete needs satisfaction and motivational outcomes were also consistent with the proposed model. As expected, needs satisfaction was positively related to higher forms of self-determined motivation. The stepwise regression results for intrinsic, integrated, and identified indicated that autonomy was a significant predictor for each motivational regulation. As expected, autonomy was the strongest

predictor of intrinsic motivation, followed by competence. Although relatedness did not add to the prediction of intrinsic motivation, the self-determination theory suggests that intrinsic motivation is more likely to thrive in a context characterized by a sense of secure relatedness (Deci & Ryan, 2000; Ryan & La Guardia, 2000). In this study, relatedness was correlated with intrinsic motivation, but did not add to the prediction of athlete motivation, suggesting that relational support may not be necessary in maintaining intrinsic motivation as long as autonomy and competence needs are met. Competence was the strongest predictor for integrated motivation, closely followed by autonomy, and relatedness also contributed to integrated motivation. With identified motivation, relatedness was the strongest predictor with all three needs adding to the prediction of identified motivation.

The three needs were not such strong predictors of the least self-determined forms of motivation (introjected, external, and amotivation). No needs predicted introjected, and only relatedness was a negative predictor of external regulation. All three needs were negatively related to amotivation, with autonomy and relatedness significant predictors in stepwise regression.

The correlational and regression analyses indicated that both coaching behavior and needs satisfaction predicted higher forms of self-determined motivation. In this study, it was important to look at needs satisfaction as a potential mediator between coaching behavior and athlete motivation. In looking at the relationship between coaching behavior and athlete motivation we can determine the best coaching environments to produce self-determined motivation, and in turn, optimal performance.

Higher forms of self-determined motivation (intrinsic, integrated, and identified) have been connected to higher levels of persistence and adherence, which is advantageous for effective performance outcomes (Deci & Ryan, 2008).

The multiple regression results provide some evidence to support that needs satisfaction may partially mediate the relationship between coaching behavior and specific motivational outcomes. The regressions suggest that needs satisfaction may partially mediate the relationship between autonomy-supportive coaching behavior and intrinsic, integrated, and identified motivation. These findings are consistent with the predictions and with previous research. Athlete motivation benefited from higher levels of autonomy-support from their coach, resulting in higher levels of needs satisfaction. It appears that autonomy-support fostered needs satisfaction, which in turn leads to more self-determined motivation.

The mediation model reflects the importance of coach behavior and athlete needs satisfaction within the sport environment. The sport environment emphasizes the importance of optimal performance, specifically coaches within sport. Keeping performance in mind in regards to the study, coaching behavior and athlete needs satisfaction influences performance outcomes. The results from this study suggest that autonomy-supportive coaching behavior positively predicts athlete needs satisfaction, which in turn, positively predicts higher forms of self-determined motivation. From this information, it is important to address the connection between motivation and performance. Research shows that self-determined forms of motivation predict adherence and persistence, which promotes optimal performance (Deci & Ryan, 2008). The

mediation model shows positive results indicating that coach behavior directly impacts needs satisfaction.

Further research is needed to evaluate needs satisfaction as a mediator of the relationship between coaching behavior and athlete motivation. The results of this study provide some evidence of a mediational relationship for specific relationships, particularly for the most self-determined forms of motivation. However, coach behavior, and particularly controlling coach behavior, also influences motivation directly. Additionally, it is important to note that the actual indirect effects of coaching behavior on motivation through needs satisfaction were not examined in this study. Thus, to further evaluate needs satisfaction as a potentially meaningful mediator, the size of the mediating effect should be examined in future research. Nonetheless, the results of this study clearly support the benefits of autonomy-supportive coaching behavior in fostering needs satisfaction and self-determined motivation, and further confirm that controlling behavior detracts from self-determined motivation.

Research is needed regarding how to best promote autonomy-supportive coaching behavior. Past research in educational settings (Reeve, Jang, Carrell, Jeon, & Barch, 2004) indicated that authority figures, such as teachers and coaches, can be taught to be more autonomy-supportive. For example, Moustaka, Vlachopoulos, Kabitsis, and Theodorakis (2012) evaluated the effectiveness of an autonomy-supportive teaching style on perceptions of basic psychological needs, behavioral regulations and exercise behavior in an 8-week exercise intervention program. The experimental group in the intervention reported an increase in perceived autonomy, the fulfillment of autonomy and

competence, and higher forms of self-determined motivation; these results support findings within this study and suggest a need for a training program. The results revealed that it is possible to create autonomy-supportive environments that produce positive needs satisfactions and higher forms of self-determined motivation. Further intervention studies in the sport domain are needed to extend and validate these findings to the coaching context. Research in this area could help develop an effective coach training program.

There are some limitations with this study that should be addressed. First, the present sample within the study was only composed of 1A high school athletes from a specific geographical area (Western North Carolina). Future research is needed to replicate the present findings with athletes across high school divisions, regions, and levels of competition (e.g., collegiate and professional levels). Second, it is important to note that the sample size is relatively small ( $n=162$ ). Although the results were statistically significant using 11 teams, a larger sample would be recommended for further study. Athletes from the ages of 13 to 18 were specifically targeted for this study, and parent permission forms were required. Obtaining parent permission forms was a difficult process that limited the amount of participants. Additionally, 1A high schools have a limited number of students and athletes; often times, athletes participate in more than one sport, making them ineligible to complete the survey again. Due to the small sample size limitations, future research examining needs satisfaction as a mediator of the relationship between coaching behavior and athlete motivation is needed.

In closing, the present findings contribute to our understanding of the relationship between coaching behavior and athlete motivation, through which coaches' autonomy support positively influences needs satisfaction and higher forms of self-determined motivation. These findings highlight the role of needs satisfaction in mediating the relationship of coaching behavior with specific forms of self-determined motivation. These findings help us understand the psychological processes that influence intrinsic motivation among athletes, and may be used to help coaches foster self-determined motivation within athletes. Future research is needed, however, to confirm the mediational model, assess the size of the mediating effects, and extend the research to programs to help coaches use autonomy-support behavior to promote needs satisfaction and self-determined motivation.

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APPENDIX A

MEASURES

Demographic Form

Age:

Gender: Male \_\_\_\_\_

Female \_\_\_\_\_

Race/Ethnicity: (check typical listing)

Asian/Asian-American \_\_\_\_\_

Black/African-American \_\_\_\_\_

Native American \_\_\_\_\_

White/Caucasian \_\_\_\_\_

Hispanic: Yes \_\_\_\_\_ No \_\_\_\_\_

Grade: Fresh \_\_\_\_\_

Soph \_\_\_\_\_

Junior \_\_\_\_\_

Senior \_\_\_\_\_

Current Sport:

School:

What is your playing status on the team:

Starter \_\_\_\_\_

not starter, but Regular player \_\_\_\_\_

Rarely play \_\_\_\_\_

### Coach Behavior Questionnaire Part 1

Please think about your current high school head coach (ONLY the head coach, please do not take into consideration any assistant coaches) in the current sport you are playing in your responses to the items using a 7-point Likert scale (1 = “Strongly Disagree”; 4 = “Neutral”; 7 = “Strongly Agree”).

<p>1. I feel that my current high school coach provides me choices and options.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>
<p>2. I feel understood by my current high school coach.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>
<p>3. I am able to be open with my current high school coach while engaged in athletics.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>
<p>4. My current high school coach conveyed confidence in my ability to do well at athletics.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>
<p>5. I feel that my current high school coach accepts me.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>
<p>6. My current high school coach made sure I really understood the goals of my athletic involvement and what I need to do.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>
<p>7. My current high school coach encouraged me to ask questions.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Neutral      Strongly Agree</p>

8.	I feel a lot of trust in my current high school coach.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
9.	My current high school coach answers my questions fully and carefully.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
10.	My current high school coach listens to how I would like to do things.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
11.	My current high school coach handles people's emotions very well.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
12.	I feel that my current high school coach cares about me as a person.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
13.	I don't feel very good about the way my current high school coach talks to me.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
14.	My current high school coach tries to understand how I see things before suggesting a new way to do things.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		
15.	I feel able to share my feelings with my current high school coach.						
	1	2	3	4	5	6	7
	Strongly Disagree		Neutral		Strongly Agree		

### Coach Behavior Questionnaire Part 2

Please think about your current high school head coach (ONLY the head coach, please do not take into consideration any assistant coaches) in the current sport you are playing in your responses to the items using a 7-point Likert scale (1 = "Strongly Disagree"; 4 = "Somewhat Agree"; 7 = "Strongly Agree").

<p>1. My current high school coach tries to motivate me by promising to reward me if I do well</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>
<p>2. My current high school coach uses the threat of punishment to keep me in line during training</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>
<p>3. My current high school coach pays me less attention if I have displeased him/her</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>
<p>4. My current high school coach tries to control what I do during my free time</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>
<p>5. My current high school coach undervalues my contribution to the team</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>
<p>6. My current high school coach is overly critical of me when he/she provides me with feedback</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>
<p>7. My current high school coach only uses rewards/praise so that I stay focused on tasks during training</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Strongly Disagree      Somewhat Agree      Strongly Agree</p>

<p>8. My current high school coach expects me to put my sport before other important parts of my life</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>9. My current high school coach evaluates me negatively if I perform badly</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>10. My current high school coach is less supportive of me when I am not training and competing well</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>11. The only reason my current high school coach rewards/praises me is to make me train harder</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>12. My current high school coach shouts at me in front of others to make me do certain things</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>13. My current high school coach tries to interfere in aspects of my life outside of my sport</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>14. My current high school coach is very judgmental if I am not competing well</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>
<p>15. My current high school coach intimidates me into doing the things that he/she wants me to do</p> <p>1      2      3      4      5      6      7</p> <p>Strongly Disagree    Somewhat Agree      Strongly Agree</p>

16. My current high school coach is less friendly with me if I don't  
make the effort to see things his/her way

1      2      3      4      5      6      7

Strongly Disagree    Somewhat Agree      Strongly Agree

### Sport Motivation Questionnaire

Please think about the current high school sport you are playing in your responses to the items using a 7-point Likert scale (1 = "Not true at all"; 4 = "Somewhat true"; 7 = "Very true").

**Stem: I participate in my current high school sport....**

<p>1. Because I enjoy it.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>2. Because it is a part of who I am.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>3. Because I would feel ashamed if I quit.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>4. Because what I do in my current sport is an expression of who I am.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>5. Because it's fun.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>6. Because it allows me to live in a way that is true to my values.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>7. Because it teaches me self-discipline.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>8. Because people push me to play.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>

**Stem: I participate in my current high school sport....**

9. I wonder what is the point.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

10. Because I find it pleasurable.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

11. I question why I continue to play my current sport.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

12. Because I would feel like a failure if I quit.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

13. The reasons why are not clear to me anymore.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

14. Because it is a good way to learn things which could be useful to me  
in my life.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

15. Because I feel obligated to continue.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

16. In order to satisfy people who want me to play.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

17. Because it is an opportunity to just be who I am.  
1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

**Stem: I participate in my current high school sport....**

18. Because if I don't other people will not be pleased with me.

1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

19. I question why I am putting myself through this.

1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

20. Because I value the benefits of my current sport.

1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

21. Because I would feel guilty if I quit.

1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

22. Because I feel pressure from other people to play.

1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

23. Because the benefits of sport are important to me.

1 2 3 4 5 6 7  
Not true at all Somewhat true Very True

### Need Satisfaction Questionnaire

Please think about the current high school sport you are playing in your responses to the items using a 7-point Likert scale (1 = "Not true at all"; 4 = "Somewhat true"; 7 = "Very true").

<p>1. I can overcome challenges in my current high school sport</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>2. In my current high school sport, I get opportunities to make choices.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>3. I am skilled at my current high school sport.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>4. I feel I am good at my current high school sport.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>5. In my current high school sport, there are people who I can trust.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>6. I get opportunities to feel that I am good at my current high school sport.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>7. I choose to participate in my current high school sport according to my own free will.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>
<p>8. I have the ability to perform well in my current high school sport.</p> <p style="text-align: center;">1      2      3      4      5      6      7</p> <p style="text-align: center;">Not true at all      Somewhat true      Very True</p>

9.	I feel I participate in my current high school sport willingly.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
10.	In my current high school sport, I feel I am pursuing goals that are my own.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
11.	In my current high school sport, I really have a sense of wanting to be there.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
12.	I show concern for others in my current high school sport.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
13.	There are people in my current high school sport who care about me.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
14.	In my current high school sport, I have a say in how things are done.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
15.	In my current high school sport, I feel close to other people.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	
16.	In my current high school sport, I can take part in the decision-making process.						
	1	2	3	4	5	6	7
	Not true at all		Somewhat true			Very True	

<p>17. In my current high school sport, I get opportunities to make decisions.</p> <p>1 2 3 4 5 6 7 Not true at all Somewhat true Very True</p>
<p>18. In my current high school sport, I feel that I am being forced to do things that I don't want to do.</p> <p>1 2 3 4 5 6 7 Not true at all Somewhat true Very True</p>
<p>19. In my current high school sport, I feel I am doing what I want to be doing.</p> <p>1 2 3 4 5 6 7 Not true at all Somewhat true Very True</p>
<p>20. I have close relationships with people in my current high school sport.</p> <p>1 2 3 4 5 6 7 Not true at all Somewhat true Very True</p>

APPENDIX B

ANALYSES

\*Alpha for the original IR scale was .627 -- IR Revised with item one dropped alpha increased to .831 and this three item scale was used in all analyses

Reliability Statistics	
IR Scale	IR Revised Scale
$\alpha = .627$	$\alpha = .831$

IR Scale Item Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
<b>IR1</b>	<b>16.96</b>	<b>15.554</b>	<b>.299</b>	<b>.831</b>
IR2	17.32	23.783	.643	.456
IR3	17.44	25.311	.552	.510
IR4	17.39	25.427	.485	.534

Table A9			
Descriptive Analyses 2			
	<u>Mean</u>	<u>SD</u>	<u>Percentage</u>
Age	15.92	1.121	
<u>Gender:</u>			
Female			30.9
Male			69.1
<u>Race/Ethnicity:</u>			
Asian American			.6
African American			2.5
Native American			32.1
Caucasian			56.8
Hispanic			7.5
<u>Grade:</u>			
Freshmen			17.9
Sophomore			34.6
Junior			25.3
Senior			22.2
<u>Status:</u>			
Starter			54.3
Regular player			28.4
Rarely plays			17.3

Table A10			
Coaching Behavior Predicting Needs Satisfaction			
Coaching Behavior Predicting Competence			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
SCQ	.550	7.065	.000*
CCBS	.178	2.279	.024
R=.501, R <sup>2</sup> =.251, F (2, 151) =25.291, p<.001			
Coaching Behavior Predicting Autonomy			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
SCQ	.633	8.694	.001*
CCBS	.115	1.580	.116
R= .593, R <sup>2</sup> = .351, F (2, 150) = 40.586, p<.001			
Coaching Behavior Predicting Relatedness			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
SCQ	.626	8.568	.001*
CCBS	.113	1.541	.124
R= .587, R <sup>2</sup> = .345, F (2, 150) = 39.444, p<.001			
* t value is significant at the .001 level (2-tailed).			

Table A11			
Needs Satisfaction Predicting Motivation			
Needs Satisfaction Predicting Intrinsic Motivation			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
Autonomy	.363	4.503	.001*
Competence	.272	3.379	.001*
Model 1: R=.520, R <sup>2</sup> = .271, F (1, 158) = 58.702, p<.001			
Model 2: R= .566, R <sup>2</sup> =.320, R <sup>2</sup> change= .049, F (2, 157) =36.995, p<.001			
Needs Satisfaction Predicting Integrated Regulation			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
Competence	.316	4.157	.001*
Autonomy	.288	3.711	.001*
Relatedness	.049	2.637	.009
Model 1: R= .585, R <sup>2</sup> =.343, F (1, 158) = 82.335, p<.001			
Model 2: R= .655, R <sup>2</sup> = .429, R <sup>2</sup> change=.086, F (2, 157) = 59.005, p<.001			
Model 3: R= .673, R <sup>2</sup> = .453, R <sup>2</sup> change=.025, F (3, 156) = 43.145, p<.001			
Needs Satisfaction Predicting Identified Regulation			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
Relatedness	.300	3.92	.001*
Competence	.239	3.054	.003
Autonomy	.236	2.954	.004
Model 1: R= .556, R <sup>2</sup> =.309, F (1, 158) = 70.803, p<.001			
Model 2: R= .625, R <sup>2</sup> =.390, R <sup>2</sup> change= .081, F (2, 157) = 50.215, p<.001			
Model 3: R= .650, R <sup>2</sup> =.422, R <sup>2</sup> change=.032, F (3, 156) = 38.033, p<.001			
Needs Satisfaction Predicting Introjected Regulation			
NO OUTPUT – No significant results			
Needs Satisfaction Predicting External Regulation			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
Relatedness	.205	-2.624	.010
Model 1: R= .205, R <sup>2</sup> =.042, F (1, 157) = 6.888, p<.001			

Needs Satisfaction Predicting Amotivation			
<u>Scale</u>	<u>Beta</u>	<u>t</u>	<u>Sig.</u>
Autonomy	-.275	-3.204	.002
Relatedness	-.225	-2.619	.010

Model 1:  $R = .399$ ,  $R^2 = .159$ ,  $F(1, 157) = 29.736$ ,  $p < .001$   
Model 2:  $R = .441$ ,  $R^2 = .195$ ,  $R^2 \text{ change} = .031$ ,  $F(2, 156) = 18.851$ ,  $p < .001$   
\*\*\* t value is significant at the .001 level (2-tailed).  
\*\* t value is significant at the .01 level (2-tailed).  
\* t value is significant at the .05 level (2-tailed).