ABSTRACT

THE RELATIONSHIP BETWEEN COACHES’ LEADERSHIP BEHAVIOR AND ATHLETES’ SELF-REGULATED LEARNING

by Jordan Goffena

The primary purpose of this study was to investigate hypothesized links between collegiate athletes’ perceptions of their coaches’ interpersonal leadership behavior and their own ability to self-regulate their sport specific learning. Self-report questionnaires were administered to 61 Division I National Collegiate Athletic Association (NCAA) athletes to assess their perceptions of their coaches’ leadership styles as well as their own self-regulation ability. Cluster analyses resulted in the identification of two groups of athletes who exhibited contrasting profiles with regard to perceived coaching style. Group 1 included athletes with high perceptions of autonomy-supportive coaching behavior and Group 2 with high perceptions of controlling coaching behavior. Comparison of the two groups in regard to their self-regulatory abilities indicated that Group 1 athletes had higher scores than did Group 2 on the planning subscale of the self-regulated learning scale. These results are discussed in relation to future research directions. Practical implications for coaches are also advanced.
THE RELATIONSHIP BETWEEN COACHES’ LEADERSHIP BEHAVIOR AND ATHLETES’ SELF-REGULATED LEARNING

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Chapter One: Introduction

Can you recall a time in your prior youth or high school sport experience when you simply, quickly, flat-out understood what your coach was saying? One of those moments when a coach looks at an athlete with a smug grin because he or she recognizes the look – you know, the AHA! moment look when one is completely immersed in the intrinsic enjoyment of learning one’s sport. Those are the kind of experiences that can make athletes feel like they are physically and mentally unstoppable, which could perhaps allow them to think it will be no time until they are amongst the top professionals in their respective sport.

Now, think about what it would be like to feel that same connection however this time it is with a collegiate coach. Do you think it would be a similar experience? Perhaps you were a collegiate athlete and you experienced a similar feeling of complete competence. Maybe you had the exact opposite feeling and coach seemingly did nothing to aid in your athletic learning. The important factor is the AHA! moment that occurs during the process of learning when the individual makes an association between two concepts, thoughts, or perceptions. When this connection happens, a physiological process of learning actually occurs where a synaptic connection unites two neurons in which the connection can be strengthened or weakened based on the individual’s interest in the initial association (Ormrod, 2012; Sousa, 2001). Each and every person has an idiosyncratic process of learning. However, each individual is predisposed to particular associations due to one’s social environment which introduces a multitude of group interactions. Such interactions are pivotal in the learning and development of young people. Whether the social relationship is parent-child, teacher-student, or coach-athlete, the roles of significant others are important in the growth of the subordinate individual. In sport, coaches have an important and powerful influence over their athletes, and the way in which coaches’ behave can further influence the way in which athletes’ choose to participate in sport and persist in learning sport skills.

Among the most prominent sport professions, a collegiate coach has pronounced influence over his or her athletes. However, collegiate sport coaching is a profession fueled by results. If a coach does not elicit winning performances, his or her job could be subject to termination. It has been found that amplified pressure in the coaching profession can change the way in which coaches choose to interact with athletes (Carpentier and Mageau, 2013), and the
way in which athletes’ perceive their social environment can facilitate or undermine positive perceptions of psychological well-being (Deci and Vansteenkiste, 2004; Ryan and Deci, 2002). Ultimately, the difference is made when an athlete perceives his or her coach as an individual who not only nurtures perceptions of competence, autonomy, and relatedness, but assists in the process of learning.

Though a coach has significant influence over an athlete’s sport experience, athletes’ sport learning is ultimately under the control of the athlete. The study presented in this paper was designed to focus on the degree to which collegiate athletes can self-regulate their sport specific learning. Self-regulated learning pertains to when individuals use their personal goals in order to monitor, regulate, and control their cognition, motivation, and behavior relative to their chosen environment (Pintrich, 2000). The specific environment for the current study is within the competitive sport domain and research has shown that many elite athletes demonstrate self-regulatory characteristics in their athletic practice (Cleary and Zimmerman, 2001). Further, it has been indicated in the sport psychology literature that enhancing self-regulatory skills should be one of the ultimate goals for sport psychology consultants (Weinberg and Gould, 2014; Weinberg and Williams, 2015).

Self-regulated learning is a construct within the social-cognitive perspective of human learning. As such, it is important to note the significance of the contextual factors within the social environment in guiding the learner to believe they can self-regulate. One of the primary factors in the collegiate sport environment that may impact athletes’ abilities to self-regulate is their coaches’ leadership style and behavior. The spectrum of leadership consists of behaviors that are either autonomy-supportive or controlling in nature. Autonomy-supportive behaviors are most characterized by guidance which satisfies positive perceptions of competence, autonomy, and relatedness. On the other hand, controlling behaviors are those which undermine positive perceptions of the basic psychological needs. In particular, it could be hypothesized that coaches who use a more autonomy-supportive style might provide an environment that would encourage or support their athletes’ abilities to self-regulate. In contrast, a more controlling style could perhaps impede positive perceptions of athlete’s controlling their own learning.

Although there has been a fairly large amount of research studies conducted over the past two decades to examine the types of coaching leadership styles and behaviors that impact their
athletes’ psychosocial well-being (see reviews by Amorose, 2007; Horn, 2008; Mageau and Vallerand, 2003), relatively few have focused on the link between coaching behavior and athletes’ self-regulation. Thus, the purpose of the current study was to examine the hypothesized links between collegiate athletes’ perceptions of their coaches’ interpersonal leadership style and athletes’ ability to self-regulate sport specific learning. To provide a context for this study, a review of the theoretical and empirical research relevant to these topics is provided in the next chapter.
Chapter Two: Review of Literature

The world of collegiate sport (especially at the Division I level) has often been described as a high stakes and tightly controlled environment. This environment may or may not be the most conducive relative to the psychosocial well-being for both coach and athlete. Ultimately, one’s view of this competitive environment is based on one’s perception. Perhaps the collegiate sport environment is one that is characterized by coach control and athlete compliance. It’s also possible that a coach could persist in supporting athletes throughout the process of acquiring sport skills needed for performance. Altogether, this environment may make it difficult for individual athletes to perceive any form of self-regulation in relation to their behavior and learning.

The potential link between coaches’ leadership styles and their athletes’ self-regulation abilities is explored in the following three sections within this chapter. This review begins with an overall perspective on the coach-athlete relationship. In particular, this first section explores a range of theoretical models of coaches’ leadership, introduces the topic of self-determination theory, and summarizes the impact that autonomy-supportive and controlling coaching behaviors appear to have on athletes’ psychosocial well-being. The second section of this chapter focuses on the topic of self-regulated learning. This begins with an explanation and overview of the construct followed by a review of the research (primarily from the education domain) that establishes a connection between an autonomy-supportive teaching style and students’ ability to self-regulate their academic learning. In the final section of this chapter, a broad summary of the research is provided followed by an overview and purpose statement for the current study.

The Coach-Athlete Relationship

Parents play a large role in guiding their children to sport participation. Once a child chooses a sport to participate in, the baton is then relayed from parent to coach. The dynamic interaction between coach and athlete can make or break the authentic experience perceived by the child. The authenticity of sporting experiences for athletes is largely dependent on the type of partnership the coach encourages for the relationship. The coach-athlete relationship pertains to the mutual and causal interrelatedness in cognition, feeling, and behavior between coaches and athletes (Jowett and Poczwardowski, 2007; Jowett and Cockerill, 2002). Coaches possess the
potential to positively guide, support, and instruct athletes’ in their sport learning while simultaneously maintaining the power to negatively impact and undermine athletes’ growth and development. The coach-athlete relationship can be characterized by the level of the interdependence between coach and athlete which can lead to positive or negative consequences based on the authenticity of the relationship (Jowett and Poczwardoski, 2007; Jowett, 2007).

Performance and psychological well-being have been noted as the two central objectives driving coaches’ motivation (Jowett and Poczwardowski, 2007). To that end, it is at the discretion of the coach whether or not the focus is strictly on winning performances or a combination of performance enhancement and building psychological well-being (Miler and Kerr, 2002). Jowett and Poczwardowski (2007) further dichotomized both athletic/professional excellence and personal growth into two different categories: successful, unsuccessful, effective, and ineffective. A coach can be classified as successful-effective, successful-ineffective, unsuccessful-effective, and unsuccessful-ineffective. The way in which a coach sustains motivation can impact the way in which the coach is influenced by performance, psychological well-being, or a combination of the two. Recent research on coaches’ motivation found that coaches maintain motivation to stay connected in their sport, to aid in their athlete’s development while simultaneously improving their coaching, to elicit winning performances, and attributed internal motives due to one’s enjoyment, love, and passion for the sport and the coaching process (McLean and Mallett, 2012). Ideally, a transformation of motivation ought to occur (Jowett, 2007) that can alter one’s perception and promote broader goals such as utilizing both performance and psychological well-being as indicators in the coaching process. However, coaching at the collegiate level subjects coaches to a complex situation that can make it rather difficult for a coach to lead his or her athletes.

Over the past two decades, a rather large number of studies have been conducted to examine if and how coaches’ leadership styles, behaviors, attitudes and values affect their athletes’ performance, learning, and psychosocial well-being. Although some of these studies (particularly the earlier ones) were atheoretical in design, most of the research conducted was based on one of several theories or models that have been proposed. These theoretical models are identified and briefly summarized in the following section.
Theoretical Models of Coaches’ Leadership

The process of coaching is a dynamic, interactive practice that takes into consideration many factors that can affect the way in which a coach leads his or her athletes. Simply put, coaching does not occur in a vacuum (Horn, 2008). Due to the social-cognitive nature of sport and the complexity of the coach-athlete relationship several theoretical models have been proposed within the past three decades. This includes the relational approach (Jowett, 2007; Poczwardowski, Henschen, and Barott, 2002) and successive integrated model (Jowett and Poczwardowski, 2007), developmental approaches (Cote, Salmela, Trudel, Baria, and Russell, 1995; Gilbert, Cote, and Mallett, 2006), a multidimensional model (Chelladurai, 1978, 1990, 2007), a mediational model (Smoll and Smith, 1989; Smith and Smoll, 2007), a working model (Horn, 2008), and a motivational model (Mageau and Vallerand, 2003). In the following paragraphs, the theoretical models using the mediational and motivational approaches to sport coaching are outlined and discussed.

Initially, the mediation model (Smoll and Smith, 1989) was directed by a three step model consisting of coaching behavior affecting athletes’ perception and recall and the subsequent mediation of athletes’ evaluative reactions. Therefore, the mediational model received its name due to the indirect role of athletes’ perceptions on their evaluative reactions (Smith and Smoll, 2007). That is, the way in which the athlete perceives his or her coach or the sport experience as a whole is contingent upon the meaning they derive from the relationship. More recently, Smith and Smoll (2007) expanded the initial model to incorporate situational and individual difference factors from both coaches and athletes.

After taking a holistic examination of the literature in sport coaching, Horn (2008) developed a working model for coaching effectiveness that incorporates the dynamic social environment that affects coaches’ decisions to behave in particular ways. This organizational framework summarizes extensive research in coaching effectiveness through the interplay between ten different factors that occur in sport coaching. The working model of coaching effectiveness (Horn, 2008) characterizes how coaches’ behaviors are determined by their own idiosyncratic experience and results in athletes’ perceptions of said coaching behavior. The first three factors pertain to the environmental antecedents that affect a coach’s perception where the sociocultural context, organizational climate and coaches’ personal characteristics interact to
form specific coaching expectancies, values, beliefs, and goals. Coaches’ expectancies then mediate coaches’ behaviors through the particular way in which the coach communicates with his or her athletes. Similarly, athletes bring personal characteristics into the social interaction that affects athletes’ perceptions, interpretation, and evaluation of coaching behaviors. Coaches’ behavior can then positively or negatively impact athletes’ perceptions depending on the way the coach behaves. How an athlete interprets their coach’s behavior has an effect on athletes’ self-perceptions, beliefs, and attitudes in their sport participation. An athlete’s self-perception, beliefs, and attitude will then determine the level and type of motivation and subsequently athlete behavior and performance.

The foundation of the working model was built upon identified conceptual approaches to coaching effectiveness (Horn, 2008; Chelladurai, 2007; Mageau and Vallerand, 2003; Smoll and Smith, 1989). The significance of coaches’ behaviors in the development of athletes’ psychological well-being and participation in sport can be further conceptualized through self-fulfilling cycles (Horn, Lox, and Labrador, 2015). Horn’s (2008) working model offers a holistic view of the coach-athlete relationship and suggests an association to the coaching-expectancy model in that coaches’ behavior affects athletes’ perceptions and subsequently how athletes’ self-perceptions affects athletes’ behavior and performance. Horn and colleagues (2015) elaborated an expectation-performance model that highlights the cyclic nature of the perpetual evaluation (e.g. a coach’s evaluation of an athlete, an athlete’s evaluation of coach’s behavior) that occurs in the dyadic relationship. The coaches’ expectancy model depicts a four step cycle consisting of coaches’ development of expectations for his or her athletes, said expectation then affects coaches’ behaviors, coaches’ behaviors then affect athletes’ behavior and performance, and finally the athletes’ behavior conforms to coaches’ expectations.

The social-cognitive mediational model (Smoll and Smith, 1989; Smith and Smoll, 2007) and the expectancy models (Horn, 2008; Horn et al., 2015) are pivotal modalities in the advancement of research in sport coaching and coaching effectiveness. The revised mediation model (Smoll and Smith, 2007) incorporated the role of both situational factors and individual difference variables into initial mediational model of coaching behaviors influence athletes’ perceptions and the subsequent athlete evaluation of the sport experience. Both models from Horn (2008; Horn et al., 2015) recognized the significant role of coaches’ feedback in the
dynamic relationship between coach and athlete. The way in which a coach presents feedback can be positively or negatively perceived, and in turn perceptions can affect athletes’ behavior and performances (Horn, 2008; Horn et al., 2015). The way in which a coach maintains leadership can have a significant impact on how athletes perceive the behavior expressed by the coach. However, additional research focuses on the significance of said coaches’ behavior in maintenance of athlete motivation.

Due to the ways in which a coach can utilize motivational strategies to engage athletes, the adoption of a motivational orientation of leadership provides the best foundation for self-determined and self-regulated behaviors. Therefore, Mageau and Vallerand (2003) developed a motivational model of the coach-athlete relationship. The motivational model draws upon facets of self-determination theory (Deci and Ryan, 2002) and the hierarchical model of intrinsic and extrinsic motivation (Vallerand, 1997; 2001) in that coaches’ influence athletes’ self-determined behaviors and subsequent intrinsic interest and enjoyment based on the interaction between precursory perceptions of coaches’ orientation, the coaching context, and athletes’ perceived behavior and motivation. The three antecedents lead to coaches’ autonomy-supportive behaviors. Because the current study was specifically designed to incorporate Self-Determination Theory, the tenants of this model are explained in the following section.

Self-Determination Theory

Self-Determination Theory (SDT; Deci and Ryan, 1985; Ryan and Deci, 2000, 2002) is a motivational theory of human learning that outlines the degree to which optimal engagement, growth, and development, along with the environment are conducive to such a motivational orientation, is necessary for persistent participation in an activity through the attainment of three basic psychological needs: competence, autonomy, and relatedness. Collective research on SDT has indicated that SDT acts as a macro-theory of motivation (Weiss and Amorose, 2008; Standage and Ryan, 2012). The following paragraphs outline Cognitive Evaluation Theory (CET; Deci, 1975; Deci and Ryan, 1985), Organismic Integration Theory (OIT; Deci and Ryan, 1985), and Basic Psychological Needs Theory (BPNT; Ryan and Deci, 2000) as micro-theories of SDT due to the way that CET, OIT, and BPNT utilize the social context in affecting SDT (Standage and Ryan, 2012). Two additional micro-theories of SDT, Goal Contents Theory
(Ryan, Williams, Patrick, and Deci, 2009) and Causality Orientations Theory (Deci and Ryan, 1985), have aided the development of SDT as a whole but will not be discussed in this paper.

Cognitive Evaluation Theory (CET; Deci, 1975; Deci and Ryan, 1985), the first of the micro-theories of SDT, takes into account the social environment of an individual and how that social interaction affects one’s intrinsic motivation. Intrinsic motivation refers to the inherent behaviors of personal satisfaction in the participation of an activity (Deci and Ryan, 1985). CET elaborates on the role of the environment in the facilitation or deviation away from the need for competence and autonomy and subsequently affecting intrinsic motivation (Weiss and Amorose, 2008). Therefore, in the coaching context, CET contends that a coach has a significant role in maintaining an environment that is conducive for the athlete’s basic needs to be satisfied in order to elicit intrinsic interest and satisfaction.

The second micro-theory of SDT pertains to the Organismic Integration Theory (OIT; Deci and Ryan, 1985). OIT is a primary function of individual movement within the SDT spectrum in that individuals internalize information from outside sources such as a coach. The SDT spectrum consists of amotivation, four forms of extrinsic motivation (external, introjected, identified, and integrated), and intrinsic motivation. Specifically, amotivation refers to an individual who is non-regulatory in their intention to participate in an activity. The first two forms of extrinsic motivation, external and introjected, pertain to individuals who are motivated almost entirely from outside sources (i.e. the coach). On the other hand, identified and integrated extrinsic motivation tends to show characteristics that are internally driven. Intrinsic motivation concerns individuals who participate in activities based on one’s inherent satisfaction. OIT asserts that important tasks will be perceived as necessary, even though said task may be uninteresting, therefore leading to increases in autonomy (Standage and Ryan, 2012).

The third micro-theory of SDT to be discussed is the Basic Psychological Needs Theory (BPNT; Ryan and Deci, 2000) that asserts self-determined behaviors can be achieved when the needs of competence, autonomy, and relatedness are met within a social interaction. A social context can either satisfy or discourage these universal needs (Deci and Vansteenkiste, 2004; Ryan, 1995), which can respectively increase well-being or ill-being, add to effective functioning or passive engagement, and strengthen one’s volition or restrict their development (Deci and
Ryan, 2000; Standage and Ryan, 2012). That is, a coach’s feedback can be perceived as positive or negative, and in turn affect his or her athletes progress toward intrinsic motivation.

Among the basic psychological needs, empirical evidence has been collected indicating that autonomy-supportive behaviors not only show the satisfaction of perceived autonomy but perceptions of competence and relatedness (Ryan and Deci, 2000). Providing athletes with freedom of choice when participating in athletic activities through autonomy-support has been conceptualized as a major influence on the adaptive perceptions of leadership behaviors (Mageau and Vallerand, 2003). Mageau and Vallerand (2003) further elaborated seven behaviors that represent the autonomy-supportive interpersonal style: providing choice within specific rule and limits, provide a rationale for tasks and limits, acknowledge the other person’s feelings and perspectives, provide athletes with opportunities for initiative taking and independent work, provide non-controlling competence feedback, avoid controlling behaviors, and prevent ego-involvement (p. 886). Collectively, maintaining these behaviors in the coach-athlete relationship will foster a positive motivational climate where adaptive perceptions of these behaviors aid in the athletes’ self-perceptions of the basic psychological needs of competence, autonomy, and relatedness. Additionally, coach implemented structure further aids the development of athlete self-perception of competence and a coach’s involvement will promote feelings of relatedness (Mageau and Vallerand, 2003). Finally, as athletes develop their self-perceptions of competence, autonomy, and relatedness based upon the autonomy-supportive behaviors provided by their coach, athletes in turn will further progress in achieving forms of intrinsic and self-determined extrinsic motivation (Mageau and Vallerand, 2003).

Since the advent of SDT, a number of research studies have been conducted to investigate the hypothesized link between coaches’ autonomy-supportive and controlling behaviors and their athletes’ psychosocial well-being. Relevant studies from this group are reviewed in the following sections.

**The Impact of Coaches’ Autonomy-Supportive Behaviors on Athletes**

One of the primary goals in the coaching behavior research has aimed to determine the mediational effects of the basic psychological needs between perceived coaching behaviors and athletes’ level of intrinsic motivation. In 2005, Hollembeak and Amorose administered
questionnaires to 280 male and female NCAA Division I college student-athletes from a range of team and individual sports. Surveys were completed by athletes during team meetings at a university student center. Perceptions of coaching behavior, athlete competence, autonomy, and relatedness, and intrinsic motivation were assessed in the study. A mediational effect was supported through structural equation modeling where the attainment of athletes’ basic psychological needs acted as a mediator between perceptions of coaches’ behavior and intrinsic motivation. Specifically, almost all dimensions of coaching behavior assessed (democratic, autocratic, positive feedback, and training and instruction) with the exception of social support significantly predicted perceived competence, autonomy, and relatedness. The psychological needs then showed significant positive effect on intrinsic motivation. Most notably, perceptions of democratic behaviors positively predicted athletes’ perceived autonomy.

Prior research indicated that encouraging and informational feedback facilitated the development of intrinsic motivation (Amorose and Horn, 2000). Additionally, Amorose and Horn (2001) found that coaches’ behaviors affect athletes’ perceptions of intrinsic motivation when the motivational environment incorporates behaviors focusing on training and instruction. Hollembeak and Amorose (2005) further aimed to find the relationship between specific coaching behaviors and intrinsic motivation and showed that when coaching behaviors were perceived as democratic, athletes would feel more autonomous, and in turn increase levels of intrinsic motivation. Social support was noted as the only coaching behavior that did not support perceptions of competence, autonomy, or relatedness.

In a follow-up study, Amorose and Anderson-Butcher (2007) set out to determine how perceived autonomy-supportive coaching behaviors affect athletes’ perceived competence, autonomy, and relatedness, and subsequent mediation of athletes’ motivational orientation. Five hundred and eighty one high school \((n = 335)\) and college \((n = 246)\) athletes participated in the cross sectional study. Two hundred and sixty three athletes were male and three hundred and eighteen athletes were female. The age ranged from 13 to 25 years old with a mean age 17 years old. The average in number of years participating in their sport was 7.85 years. Athletes who agreed to participate in the study took 15 minutes of practice time to complete the survey. Consent was provided for the athletes who took part in the study and the coach was asked to leave the vicinity when the test was being filed out. The short version of the Sport Climate
Questionnaire was used to glean athletes’ perception of their coach’s autonomy-supportive behavior, and the researchers assessed athletes’ perception of their level of competence, autonomy, and relatedness based on a measure created by Hollembeak and Amorose (2005). Finally, the Sport Motivation Scale (Pelletier et al., 1995) was used to assess athletes’ motivational orientation.

The results (Amorose & Anderson-Butcher, 2007) indicated that perceptions of coaching behaviors can significantly predict athlete motivation. Specifically, structural equation modeling techniques revealed that autonomy-supportive behaviors predicted athletes’ perceptions of competence, autonomy, and relatedness. Further, perceptions of the basic psychological needs subsequently were found to predict athletes’ motivational orientation. The results showed athletes’ perceptions of autonomy-supportive coaching behaviors were positively and indirectly related to athletes’ motivational orientation. Perceptions of autonomy support were also positively connected to athletes’ perceptions of competence, autonomy, and relatedness and the three needs were positively associated with athletes’ motivational orientation.

Using an Action Research (AR) framework, Ahlberg, Mallett and Tinning (2008) designed a study that assessed the development of coaching behaviors and the role of autonomy support in the coaching process. This qualitative case study used field notes from a research observer, video analyses, coach reflection, and semi-structured interviews before and after the six week intervention with the athletes. The study was designed with the primary purpose to increase the coach’s awareness of autonomy-supportive coaching practices through the AR approach. One male coach with 10+ years of coaching experience and five elite rugby players were selected for the study. Within the interview process the coach indicated increases in his awareness of his coaching practice and effective communication with the athletes. The athletes showed perceived appreciation for the amount of choice provided therefore increasing perceptions of autonomy support. The increased sense of autonomy facilitated communication between coach and athlete and positive perceptions of questioning from the coach led to the development of an autonomy supportive environment. These results suggest that utilizing an AR approach can increase coaches’ awareness of their coaching practices and the way in which athletes’ response to said practices. Though this study is not meant to prove valid causation between coach behavior and athlete perception of autonomy, the use of the AR approach helped
the coach reflect on his coaching practices as his aim was to maximize player motivation and satisfaction. It was noted that the coach’s awareness of his coaching practice increased and the overall increase in awareness was regarded as positive.

Gillet, Vallerand, Amoura, and Baldes (2010) conducted a novel study that was designed to examine if and how an autonomy-supportive coaching style facilitates athletes’ self-determined motivation as mediated by contextual and situational factors. Judokas athletes completed a questionnaire pertaining to motivation, which was taken before a competition. Specifically, questionnaires were provided two hours before the competition and performance was assessed after the athletes were finished with their competition. Thirty two female and sixty nine male \((N = 101)\) athletes participated in the study. Athletes were assessed on their perception of coaches’ autonomy support, contextual and situational motivation, and their performance.

The results from this study (Gillet et al., 2010) showed that perceived autonomy support was significantly and positively correlated with both contextual self-determined motivation and situational self-determined motivation. Moreover, coach autonomy support was positively related to contextual self-determined motivation within the structural equation model. Contextual motivation was further connected to situational self-determined motivation and subsequently the objective performance of the athletes. The findings show that there is a positive relationship within the structural equation model. Until this study, no research has made the connection between situational motivational factors and performance, therefore implying situation motivation as a mediator between contextual motivation and performance. Moreover, the indirect connection can be made to the antecedent coach behavior in the maintenance of athlete motivation in comparison to athlete performance. It was recommended by the authors that future research focus on promoting coaches’ autonomy-support in that it could lead to developments in coach effectiveness. It was further recommended that experimental designs and a generalization of the sample be implemented.

Mouratidis, Lens, and Vansteenkiste (2010) hypothesized that perceived legitimized autonomy-support would be positively associated with intrinsic and identified motivation and would be negatively associated with introjected and external regulation. The study found that perceived autonomy-support was positively associated with intrinsic and identified motivation, intention to persist, and athlete well-being. Moreover, athletes’ perception of the legitimacy of
the information communicated is important in athletes’ likelihood to effectively use the corrective feedback. More importantly researchers recommended that the incorporation of controlling dimensions alongside autonomy-supportive measures would have added value to the results connected to the satisfaction of basic psychological needs.

More recently, Carpentier and Mageau (2013) aimed to find the relative impact of autonomy-supportive change-oriented feedback (i.e. negative feedback) on athletes’ phenomenological experience and performance. Coaches and athletes completed perceptual questionnaires consisting of similar demographic questions, and then an assessment for coaches and a separate assessment for athletes after a practice session. Three hundred and forty male and female athletes and fifty eight coaches across 13 different sports participated in the study. The athlete age ranged between 11 and 35 years old and the coaches age ranged between 18 and 72 years. The coaches were about half men (48%) and half women (52%) whereas there were 206 female athletes compared to 134 male athletes. Athletes completed scales that consisted of a combination of questions on the quantity of change-oriented feedback, perceived autonomy support, self-determined motivation, amotivation, basic psychological needs satisfaction, self-esteem, life satisfaction, subjective vitality, and positive and negative affect. The coaches were assessed on their perception of their autonomy-supportive style and his/her athlete’s level of performance.

The results of this study (Carpentier & Mageau, 2013) resulted in the identification of 6 characteristics of change-oriented feedback. Further analyses showed that coaches’ autonomy-supportive style significantly predicted the six characteristics of change-oriented feedback. Specifically, coaches who were more autonomy-supportive tended to be more empathetic, expressing feedback with choices for solutions, and were based on clear, attainable, and known goals. Perceptions of autonomy support were also connected to feedback that was free from person-related statements, coupled with tips, and spoken from a considerate tone of voice.

The primary aim of the study conducted by Carpentier and Mageau (2013) was to test the impact of change-oriented feedback on athletes’ experiences and performances. It was found that when change-oriented feedback was communicated through an autonomy-supportive style, the quality of the feedback was a significant indicator of athletes’ outcomes and performances. Results showed that athletes’ experiences more self-determined motivation, well-being, self-
esteem and satisfaction with regard to their need for relatedness, competence, and autonomy. Autonomy-supportive change-oriented feedback was also associated to lower levels of amotivation and negative affect. It was further found that coaches who communicate through an autonomy-supportive style also provided their athletes with less feedback. The researchers proposed that this occurred due to autonomy-supportive being more efficient than the controlling style of feedback, therefore less feedback is needed. Coaches who communicate through an autonomy-supportive style provided more change-oriented feedback that is characterized by the six dimensions of the now validated Quality of Change-Oriented Feedback Scale. The research contributed to adding new finding for both the autonomy support literature and the feedback literature in that change-oriented feedback can be perceived as autonomy-supportive which is important because the way in which a coach communicates change-oriented feedback will predict athletes’ experiential outcomes more so than the frequency of the feedback. One limitation in the development of the Quality of Change-Oriented Feedback Scale is that additional dimensions of the scale were dropped (delivered promptly and privately) due to lack of distinction in the factorial analysis. Also, consistent with Mourtatidis, Lens, and Vansteenkiste (2010), it was recommended to incorporate more controlling characteristics into the scale.

In summary, the studies reviewed in the previous paragraphs provide clear support for the notion that athletes whose coaches exhibit an autonomy-supportive interaction style tend to score high on motivation, performance, and psychosocial well-being. A contrasting coaching interactional style has recently been identified and labeled as controlling (Bartholomew, Ntoumanis, and Thøgersen-Ntoumani, 2009). This style is characterized by strategies such as using tangible rewards to control athletes’ behavior, expressing controlling feedback, using excessive personal control, using intimidation as a means of communication, promoting ego-involvement, and utilizing conditional regard. Obviously, these behaviors are antithetical to an autonomy-supportive leadership style which recommends that coaches should minimize maintaining overt control over athletes, criticizing athletes’ efforts, using tangible rewards in motivating athletes and promoting ego-involvement (Mageau and Vallerand, 2003). Consistent with the SDT literature, expressing controlling behaviors can thwart the satisfaction of basic psychological needs and subsequently levels of intrinsic motivation (Bartholomew, Ntoumanis, Ryan, Bosch, and Thøgersen-Ntoumani, 2011; Bartholomew, Ntoumanis, and Thøgersen-
Ntoumani, 2009). The few studies that have been conducted to examine this dimension of coaching style are reviewed in the following section.

The Impact of Coaches’ Controlling Behaviors on Athletes

Similar to the research on autonomy-support, a major aim for research on coaches’ controlling behaviors is the consequent effect on athletes’ levels of intrinsic motivation. In order to assess this effect, Amorose and Horn (2000) recruited 386 NCAA Division I student-athletes to assess their perceptions of their coaches’ behavior as well as their levels of intrinsic motivation. The results of this study revealed that athletes’ perceptions of their coaches’ behavior were related to their own level of intrinsic motivation. Specifically, a perceived leadership style that emphasized democratic behavior and high frequencies of training and instructional feedback were most connected with higher levels of intrinsic motivation. In contrast, controlling coaches were found to express more autocratic behaviors and to use external rewards and praise to achieve athlete compliance, which in turn undermined perceptions of self-determination in the athletes.

Hollembek and Amorose (2005) advanced this research when they administered similar perceptual questionnaires to 280 Division I male and female collegiate student-athletes across team and individual sports. Athletes were assessed on their perceptions of their coaches’ behavior and their self-perceptions of intrinsic motivation as mediated through the satisfaction of the basic psychological needs. Analysis of this mediation model revealed a strong association between democratic decision making relative to autonomy-supportive behaviors and autocratic decision making in relation to controlling behaviors. Specifically, controlling behaviors, or perceptions of autocratic behavior, were found to negatively impact perceived autonomy and therefore to decrease athletes’ level of intrinsic motivation.

Carpentier and Mageau (2013) recently examined the role of change-oriented feedback (i.e. negative feedback) in relation to athletes’ perceptions of well-being. A sample of 340 athletes and 58 coaches participated in this examination of coaches’ and athletes’ perceptions. Coaches were assessed based on their autonomy-support and performance, and athletes were assessed on the quantity of change-oriented feedback, perceptions of autonomy support, and other characteristics of psychosocial well-being. Results showed that negative feedback, a type
of communication many controlling coaches persist in using, was effectively eliminated through an autonomy-supportive approach. Further, it was found that coaches who persist with a controlling style may use change-oriented feedback as a way to cope with their own stress. This was discussed as an issue due to using negative feedback as a coping mechanism takes the focus off the athlete.

Most recently, Matosic, Cox, and Amorose (2014) examined the relationship between controlling coaches’ behaviors on scholarship status through the mediating role of perceived autonomy and competence and, subsequently, the indirect relationship to intrinsic motivation. A sample of 162 male and female college aged swimmers participated in the study. This study was descriptive in nature and used perceptual questions in order to determine associational correlations and a path analysis. Measures used were based on perceived autonomy, perceived competence, motivational regulation, and controlling coaches’ behaviors along with demographic questions.

Matosic and colleagues (2014) found that controlling use of rewards was negatively correlated to competence and autonomy, which suggests the mediating role of competence and autonomy in the relationship between controlling coaching and intrinsic motivation. Moreover, scholarship status and a perception of controlling coaching behaviors were mediated through negative perceptions of competence. That is, if an athlete perceives his or her coach as controlling, then he or she will more likely have a negative perception of the coach when being asked questions about scholarships.

In general, then, the studies reviewed in the previous two sections do provide considerable support for the idea that a coaching style that is characterized as autonomy-supportive will have a positive impact on athletes’ levels of self-determined motivation, increases in performance, and ultimately an increase in intrinsic motivation. On the other hand, a controlling coaching style has been found to have a negative impact on the satisfaction of basic psychological needs in athletes and the subsequent decrease in their levels of intrinsic motivation.

As noted in the previous paragraph, the research studies conducted to date in the sport setting have confirmed the idea that coaches’ autonomy-supportive and/or controlling
interactional styles do have significant impact on their athletes’ level and type of motivation as well as on multiple other dimensions of athletes' psychosocial well-being (e.g., perceived competence, self-esteem, satisfaction). However, one possible athlete psychosocial outcome that has not been sufficiently examined in the collegiate sport setting centers on athletes' ability to self-regulate their sport specific learning. This particular construct is examined from both a theoretical and empirical perspective in the following section of this paper.

**Self-Regulated Learning**

SDT makes considerable reference to motivational regulation. However, regulation applies to a much more complex interaction between individual psychological factors. Self-regulation is a construct that draws upon many facets of the social cognitive and motivational theories of human learning that can lead individuals to develop a sense of personal agency (Ormrod, 2012). The self-regulation of one’s learning experience can be viewed as the degree to which individuals are proactive in incorporating metacognitive, motivational, and behavioral approaches in the process of learning (Zimmerman, 2006, 2008). To that end, self-regulated learning (SRL) is “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment” (Pintrich, 2000, p. 453).

The theory of SRL historically pertains to the research environment within the educational domain. However, researchers have observed similar applications of self-regulatory processes in activities such as writing, music and sport (Zimmerman, 1998a). Self-regulatory processes account for goal-setting, task strategies, imagery, self-instruction, time management, self-monitoring, self-evaluation, self-consequences, environmental structuring, and help seeking (Zimmerman, 2008, 2006). The complex nature of self-regulatory processes in academic studying led to the development of a particularly useful model of SRL. Zimmerman (1998b, 2000) specified self-fulfilling cycles of academic regulation consisting of a forethought phase, performance phase, and a self-reflection phase based on multidimensional self-regulatory processes. The forethought phase represents the types of practices that occur before performing a task. The subprocesses of the forethought phase are goal-setting, strategic planning, self-efficacy beliefs, goal orientation, and intrinsic interest. The next stage in the cycle accounts for
what happens during the performance. The factors involved in the performance phase are attentional focus, self-instruction, imagery, and self-monitoring. Finally, after performing the task one can utilize particular processes that will help them reflect on the performance and then prepare for the cycle to start over. The self-reflection phase represents self-evaluations of said performance, designating attributions, realizing one’s self-reactions, and recognizing the adaptability of the individual.

Although self-regulation and the processes used to support its development have primarily been used in the academic domain, there are some studies that have examined self-regulatory practices in the physical activity domain. These studies are reviewed in the following section.

Research on Self-Regulatory Processes in the Physical Activity Setting

A series of studies from Zimmerman and colleagues were amongst the first to show the relationship between the three phases of SRL in physical activity. Specifically, Zimmerman and Kitsantas (1996) conducted a study that was designed to outline the role of goal setting and self-recording procedures in the acquisition of dart throwing skills. The researchers first hypothesized that using process goals will increase throwing skill, self-efficacy beliefs, and intrinsic interest. Secondly, researchers hypothesized that use of self-recording procedures would not only increase throwing skill and self-efficacy beliefs, but also increase self-reactive beliefs. A sample of 50 high school girls, ages 14-16 years, participated in the study during physical education class. A quasi-experimental design was used, and study participants were randomly assigned to one of four conditions; (a) use of a product goal and no self-recording; (b) use of a product goal and self-recording; (c) use of a process goal and no self-recording; and (d) use of a process goal and self-recording. Also, three measures were used in the study. These consisted of one measure of dart-throwing performance, a self-efficacy scale, a self-reaction scale, and an intrinsic interest scale.

The researchers (Zimmerman & Kitsantas, 1996) analyzed the obtained data using a series of ANOVAs, correlational analyses, as well as a descriptive path analysis. The results provided statistical validation of both hypotheses. Participants in the process oriented goal conditions showed greater success in dart throwing abilities compared to the product goal
conditions. Moreover, self-recording strategies directly enhanced throwing abilities more so than the non-recording conditions. A limitation to the study pertains to the short assessment period due to the fact participants were learning dart throwing skills in gym class. Therefore, longitudinal developmental studies are recommended for further analysis of the underlying self-regulatory processes in the acquisition of motor skills.

Succeeding research from Kitsantas and Zimmerman (1998) directly applied the three phase self-regulation cycle to the acquisition of dart throwing skills with high school girls. The emphasis of the experiment was on instantaneous acquisition of motor skills as it pertains to key self-regulatory processes to maintain motivation. Specifically, the researchers assessed individual performance in acquiring dart throwing skills based on the implementation of analytic strategies versus imaginal strategies, dynamic goals versus fixed goals, and the presence of a self-evaluation recording system versus not having a recording system. Results were significant for all three hypotheses. This indicated self-efficacy beliefs, self-satisfaction, and intrinsic interest enhanced the skill acquisition process. Utilizing self-recording procedures predicted the increased significance of self-efficacy beliefs, self-satisfaction, and intrinsic interest.

In a similar fashion, Cleary and Zimmerman (2001) employed the cyclic model of self-regulated learning when assessing basketball experts, non-experts and novices in the acquisition of free-throw shooting skills during self-directed practices. The participants were assessed on their general shooting skill and then on their individual perception of goal setting, self-efficacy, strategy choice, self-satisfaction, and attributions. The results indicate that experts are better self-regulators than non-experts who are then better self-regulators than novices. Moreover, as expertise increases, self-regulatory skills increase. That is, as one gets better in their sport, one will be more likely to effectively utilize the forethought (goal setting, self-efficacy, strategy choice) and self-reflective (self-satisfaction and attributions) stages in self-regulation cycle. This study validated self-regulatory processes in a self-directed practice setting (i.e. free throw shooting). But, it does not necessarily pertain to the competitive sport context such as coach organized practice sessions or scored games. But, these results do provide empirical evidence that experts tend to utilize self-regulatory processes in their practices. However, what would then happen if a coach is incorporated into the practice setting?
To address the role of the coach (or teacher) in regard to the self-regulation abilities of learners, Kolovelonis and Goudas (2013) examined SRL as a significant construct in the physical education setting. In particular, these authors conducted a broad scale literature review on the construct of SRL and the application of the research from the past two decades in regard to motor skill acquisition and sport skill learning. The review began with an overview of SRL as a psychological construct, and then made an application to the physical education domain. The primary focus of the literature revolved around the cyclic model of forethought, performance, and self-reflection phases (Zimmerman, 1998b) and the four level model consisting of observation, emulation, self-control, and self-regulation levels of SRL (Zimmerman, 2000).

Upon reflection of the modalities of SRL, five particularly interesting research directions were proposed. First, it was suggested that an examination of the effectiveness of the four level model be conducted. Secondly, most studies provided only one educational intervention to determine the results; it was suggested to incorporate prolonged investigations of similar construction. Next, researchers were recommended to assess open sport skills in the pursuit of SRL. Another research direction offered the analysis of various types of goal setting. Finally, it was suggested to incorporate the effectiveness of teaching styles in the learning of self-regulatory skills. That is, interpersonal communication such as the autonomy-supportive or controlling style could have a major effect on a student or athlete’s ability to use and learn self-regulatory skills.

The influential role of the coach on athlete self-regulation was further made clear in another research study conducted by Callary and Durand-Bush (2008) who implemented a resonance intervention with a volleyball team. Resonance refers to the experiential process of individual engagement in order to consistently regulate one’s feelings. A set of 16 female college aged (18-24 years) volleyball athletes with one male coach participated in a 26-week intervention. The intervention was divided up into three phases: a pre-intervention (6 weeks), intervention (14 weeks), and a post-intervention (6 weeks). Though it was not the main focus of the study, Callary and Durand-Bush (2008) found that a coach can have great influence on how athletes’ self-regulate their thoughts, feelings and actions.

Collins and Durand-Bush (2010) then expanded the self-regulation literature by implementing an intervention aimed to enhance team cohesion and performance for an elite curling team through resonance. Four college age female athletes (18-20 years) and one male
coach participated in a 16-week self-regulation intervention consisting of individual and group interviews, field note observations, debriefing sessions and a pre- and post-season questionnaire. The intervention used the Resonance Performance Model to facilitate self-regulation. The study results revealed increases in team cohesion and performance as a result of learning self-regulatory skills. Self-regulation is an important factor as it is inevitable that elite athletes will be faced with adversity during the course of a competitive season. It was found that the mean scores for the team relative to self-regulation increased from 4.8 to 5.4. Moreover, it was made clear from one athlete that self-regulation was important because it helped in her success. One particular limitation to this study was that the questions asked were qualitative in nature. Therefore the questions asked lack empirical validation. It was recommended that researchers should incorporate more in-depth multiple case studies in future investigations.

Building on the 2010 study, Collins and Durand-Bush (2014) elaborated on the ways in which a coach can nurture self-regulation. The purpose of their study was to examine how an elite coach can support his athletes to self-regulate throughout a competitive season and to identify facilitative strategies used by the coach. Functioning under two theoretical frameworks, this research used the Resonance Performance Model (as used in Collins and Durand-Bush, 2010) and Social-Cognitive Model of Self-Regulation (Zimmerman, 2000). An elite junior curling team consisting of 4 female athletes between 18 and 20 years old and one male coach with over 20 years of national and international experience participated in the 24-week intervention consisting of a 4-week pre-intervention, 16-week intervention, and 4-week post-intervention. Consistent with Zimmerman (1998b, 2000), Collins and Durand-Bush (2014) found that a coach nurtured athlete self-regulation through utilizing strategies that aid in athlete preparation (e.g. goal setting, strategic planning, self-efficacy), performance (e.g. attentional focus, self-recording), and self-reflection (e.g. self-evaluation, causal attribution, self-satisfaction). The coach used strategies such as setting interpersonal goals, setting task-oriented goals, encouraged effective communication, recognized personal improvement, and used statements focusing on the process supported athlete self-regulation in the preparation phase. Strategies such as encouraging athletes to let go of mistakes, setting focus goals, and charting performance were used in the performance phase. And to wrap up a performance, the coach used strategies such as identifying areas of improvement, encouraged accountability, and
provided constructive feedback and instruction to nurture athlete self-regulation in the self-reflection phase.

In order to assess self-regulatory practices in sport, Toering, Elferink-Gemser, Jordet, Jorna, Gert-Jan, and Visscher (2011) devised a study to measure the SRL behavioral correlates in elite youth soccer. Six male elite youth soccer coaches directly participated in the study and thirteen youth soccer athletes were observed and filmed. Coaches were interviewed in order to describe their thoughts on which practice behaviors reflect components of SRL.

The results from the Toering et al. (2011) study indicated a total of 16 behavioral items observed by the expert coaches. Coaches’ perceived good SRL behaviors as athletes who: verbally approaches coach during instruction, verbally approaches coach during exercise, verbally approaches coach after exercise, coaching of a teammate, works to improve weak points prior to the start of practice, apologizes to team after making an error, shows effort during time on pitch before practice starts, wore the correct outfit for practice, positions in the front of the line at the start of an exercise, asks for the ball, and answers questions. Coaches’ perceived bad SRL behaviors as athletes who: becomes distracted during instruction, displays excessive behavior, does not watch teammates performing exercises when waiting his turn, does not perform exercise as intended, and makes errors during exercise.

The study conducted by Toering and colleagues (2011) verifies the significance of self-regulatory behaviors for skill acquisition during youth soccer practices. In addition, this study makes a theoretical association between coaching behavior and athletes’ SRL. This association was conceptualized based on Wong and Bridges (1995) results that found coaching behaviors can strongly influence persistence in achievement, and such perspective increasingly depends on athletes’ perceptions of competence and control. On this basis, Toering et al. (2011) concluded “Thus, in youth soccer, the coach has great impact on players’ type of motivation and, therefore, on young athletes’ self-regulation as well” (p.112).

As should be evident from the results of the studies described in the previous paragraphs, the strategies utilized by coaches (or the strategies that coaches were trained to use) in an attempt to nurture self-regulation in their athletes are consistent with the behaviors that are characteristic of an autonomy-supportive coaching style. This includes things such as providing athletes with
choices, having a rationale for required tasks, providing opportunities for athletes to take
initiative, and acknowledging athletes’ feelings and perspectives (Mageau and Vallerand, 2003).
At this point, however, researchers in sport psychology have not yet specifically examined the
degree to which an autonomy-supportive coaching style might impact on their athletes’ ability to
self-regulate their learning within the competitive sport setting. However, this link has been
examined in the educational context, and the results of one such study are reviewed in the
following section.

**Autonomy-Support and Self-Regulated Learning in Education**

SDT and SRL are major social-cognitive theories of human motivation that originated
from research in the education domain. Though the collective research on self-regulatory
processes pertains to the pursuit of expertise in academic studying, the cyclic model of SRL can
be applied to many different areas of expertise such as sport. Psychological research assessing
skill acquisition has indicated that in order for an instructor to organize an effective practice
session the practice needs to be deliberate (Ericsson, Krampe, & Tesch-Römer, 1993) and
deliberate practice can be connected to optimal learning experiences (Ericsson, 1998).
Moreover, utilizing deliberate practice techniques tend to reflect an educator’s systematic
attempt to provide an environment conducive to self-regulatory practices (Zimmerman, 1998b,
2000; Cleary & Zimmerman, 2001). Then, the actual learning of a skill lies in the learner’s
perception of the importance of learning self-regulatory skills and, inherently, the perception of
the educator who is teaching the skill.

A noteworthy study on secondary school students determined the relationship between
autonomy supportive teaching behaviors as it pertains to student SRL (Sierens, Vansteenkiste,
Goossens, Soenens, and Dochy, 2009). The study sample included 526 (264 male) students with
an average age of 17.9 years who completed self-report questionnaires to assess the variables of
interest. Statistically significant positive correlations between autonomy support as provided by
the teachers and structure, autonomy support to SRL, and structure to SRL were recorded. The
results provide evidence to a synergistic interaction between autonomy support and structure.
Thus, structure is positively related to the use of self-regulatory skills when higher levels of
autonomy support are perceived by the student. The authors conclude that an autonomy-
supportive teaching style, when combined with increased structure in the academic environment,
can provide learners with student-centered feedback, help and optimal challenge. This, in turn, can be connected to higher perceptions of self-regulated learning in the students.

**Summary of Literature**

The coach of an athletic team has considerable influence over his or her athletes. Due to the pivotal role that coaches’ play in leading their teams, there has been an abundance of research studies that show how coaches’ behaviors can impact the psychosocial well-being of their athletes. This holds true across all levels ranging from youth sport to collegiate sport. However, there tends to be much more demand for winning performances at the collegiate level. Research shows that the increased pressure can affect how coaches’ behave (Carpentier and Mageau, 2013), which could subsequently affect their effectiveness in teaching their athletes the skills needed for learning and performance at the higher level. In order to assess said coaching behaviors, researchers have utilized a range of theoretical frameworks over the past few decades.

Self-determination theory is a motivational theory that has been commonly used to assess a coach’s role in maintaining athletes’ participation in sporting experiences. From this body of literature, researchers have found that coaches’ can behave in autonomy-supportive and controlling ways. There has been a fairly large amount of recent studies that provide support for the positive effects that perceived autonomy-support can have on athletes’ basic psychological needs and intrinsic motivation. Conversely, similar studies have shown that increased perceptions of control are more connected with negative views of athletes’ psychosocial well-being. Ultimately, the way in which a coach behaves is contingent upon many factors, but those behaviors affect athletes learning, motivation, and performance.

The above research has indicated strong connections between coaches’ leadership behaviors and athletes’ psychological well-being. However, one dimension of athletes’ well-being that has not been well examined in the sport setting pertains to athletes’ abilities to self-regulate their learning. Research has shown that self-regulation is a key component to what characterizes elite athletes as experts. In a similar vein, athletes’ abilities to self-regulate their sport learning is important for their persistence during practice experiences. Self-regulation has gained much attention within the motor learning and skill acquisition research in sport, however the bulk of the SRL literature pertains to the field of education.
The primary purpose of this research study was to assess the potential link between collegiate athletes’ perceptions of their coaches’ leadership style and their own perceived ability to self-regulate their sport learning. Academic teachers have historically held a role where they are the sole provider of knowledge within the classroom. However, educational research has shown a shift in the paradigm transitioning away from teacher domination in the classroom to that of providing one’s students’ with more perceived control. This is known as autonomy-support and can be characterized by empathizing with students’ perspectives, providing choice and rationale for their decisions, and supporting the learners’ in their academic activities (Katz and Assor, 2007) and is critical for optimal learning (Reeve et al., 2004). Most notably, Sirens et al. (2009) found positive correlations between perceived structure and autonomy-support and self-regulated learning.

Though there is significant research in sport indicating the influential role of self-regulatory skills, there are still certain aspects of self-regulation that need further empirical testing. Moreover, the social-cognitive nature of self-regulating one’s learning experience indicates the role of one’s social environment in the process of learning can be quite important for optimal learning. The literature on teaching effectiveness in the education literature has consistently shown the role of the teacher as an autonomy-supportive leader in regard to self-regulatory processes in student learning. However, in sport, there has not been much corresponding research to examine the link between coaches’ leadership behaviors and athletes’ ability to self-regulate their learning experiences. Therefore, this study was designed to fill the current gap in the literature between the education and sport domains.

**Overview and Purpose of Proposed Study**

As noted in the previous section, the purpose of the proposed research is to investigate the hypothesized links between collegiate athletes’ perceptions of their coaches’ interpersonal leadership style and athletes’ SRL. First, it is hypothesized that perceptions of autonomy-supportive coaching behaviors will be associated with an athlete’s ability to self-regulate his or her sport specific learning. In contrast, it is further hypothesized that perceptions of controlling coaching behaviors will be associated with an athlete’s inability to self-regulate his or her sport specific learning.
Chapter Three: Methods

The overall goal of the proposed research study was to investigate the hypothesized links between collegiate athletes’ perceptions of their coaches’ interpersonal leadership style and behaviors and athletes’ ability to self-regulate their sport learning. Athletes were surveyed using questionnaires to determine perceptions of coaches’ leadership style. Then, athletes completed a self-report measure to determine the degree to which they self-regulate their sport learning.

Participants

Study participants included 61 National Collegiate Athletic Association (NCAA) Division I student-athletes who ranged in age from 18 to 23 years ($M_{\text{age}} = 19.71, SD = 1.23$). This sample consisted of both male ($n=17$) and female ($n=42$) athletes who participated in a range of individual and team sports. This included baseball ($n=1$), field hockey ($n=14$), swimming ($n=2$), synchronized skating ($n=12$), track and field/cross-country ($n=21$), and volleyball ($n=9$). Based on self-report data, these student-athletes were primarily Caucasian (93.2%), but also included African-American (1.7%), Asian-American (1.7%), and multiple-race individuals (3.4%).

Athletes in this sample varied in prior sport experience with a range of 3 to 20 years. In terms of their coaches’ gender, 64.4% of the athletes indicated they had a male coach and 35.6% reported having female coach. Finally, athletes were asked to indicate their current college grade point average (GPA). Results showed that the athletes as a group self-reported GPAs of 2.0 or higher (on a 4.0 scale), with the majority in the scale range of 3.0 to 3.5.

Procedure

Athletes completed the questionnaires using both paper-pencil and online collection methods. Data collection began when coaches were approached during a monthly coaches’ meetings and asked if they would be willing to schedule an in-person distribution of the survey packet. Additional recruitment consisted of an email to coaches (see Appendix F) asking for their participation in forwarding the online version of the packet to their athletes (see Appendix G). The majority of the study participants completed the online version of the survey packet delivered through Qualtrics data collection software. However, some teams completed the
survey packets in their team locker room/ team meeting room without the presence of the coach, with questionnaires administered by the primary researcher.

**Measures**

The study utilized multiple inventories in order to obtain the relevant study data. The multi-section inventory contained a brief section on demographic questions along with questions taken from the assessment of perceived interpersonal behaviors (Pelletier, Fortier, Vallerand, and Brière, 2001), the Controlling Coaches’ Behavior Scale (Bartholomew, Ntoumanis, and Thøgersen-Ntoumani, 2010), and an adapted version of the Self-Regulation of Learning Self-Report Scale (Toering, Jordet, and Ripegutu, 2013; Toering, Elferink-Gemser, Jonker, van Heuvelen, and Visscher, 2012). Further detail about each questionnaire is provided below.

**Demographic Questionnaire**

This short section of the assessment consisted of questions pertaining to athletes’ demographics. Specifically, athletes were asked to designate their age, gender, race/ethnicity, academic year (e.g. freshman, sophomore, junior, senior), sport context (e.g. soccer, basketball, track and field), and prior sport experience. They were also asked to indicate their coaches’ gender as well as their current cumulative grade point average.

**Assessment of Perceived Interpersonal Behaviors**

The Assessment of Perceived Interpersonal Behaviors (PIB; Pelletier et al., 2001) is an adapted scale derived from Pelletier, Tuson, and Haddad (1997) that utilized swimmers’ perceptions of their coaches’ behavior. This section of the questionnaire consists of 8 items, four assessing perceptions of autonomy-support and four assessing perceptions of controlling behaviors. Items were answered based on a 5-point Likert scale where 1 = “Does not correspond at all”, 3 = “Corresponds moderately”, and 5 = “Corresponds exactly”.

The scale was initially developed by Pelletier, Tuson, and Haddad (1997) and was used with athletes ranging from 13 to 22 years of age. Acceptable levels of internal consistency were found with this sample for both the autonomy-support and controlling subscales. For the current study, the internal consistency of the two subscales was assessed using Cronbach’s alpha.
analyses. Acceptable measures of reliability (Nunnally & Bernstein, 1994) were obtained for both the autonomy subscale \((r = .70)\) and for the controlling subscale \((r = .77)\).

**Controlling Coaches’ Behavior Scale**

The Controlling Coaches’ Behavior Scale (CCBS; Bartholomew et al., 2010) is a multidimensional measure designed to assess athletes’ perceptions of coaches’ controlling interpersonal style. The CCBS questionnaire contains 15 items that are broken down into four categories of controlling behaviors: controlling use of rewards, negative conditional responses, intimidation, and excessive personal control. Athletes respond to each item by specifying the degree to which they agree or disagree with a statement about their coach. Each question begins with the stem “Please indicate how much you agree or disagree with each statement”. Athletes then respond to each item by selecting a number from 1 – 7, where a selection of 1 indicates strongly disagree, and a selection of 7 indicates strongly agree.

The development of the CCBS progressed through four stages (Bartholomew et al., 2010). The initial item validation in the first study utilized an initial pool of 53 items. Researchers conducted semi-structured interviews with 6 coaches and focus group sessions for 17 athletes. Changes were made and 41 items remained for a group of 9 experts to review. Collectively, 33 items were deemed fit as a result. Study two examined the 33 items through an exploratory factor analysis that used data from a sample of 264 athletes involved in both individual and team sports. Study two provided further item analysis where 17 items were dropped, providing a final assessment of 16 items. Moreover, from the final 16 items 5 subscales were gleaned from factor analysis: controlling use of rewards, negative conditional regard, intimidation, excessive personal control, and judging and devaluing.

The purpose of study three (Bartholomew et al., 2010) was to utilize a confirmatory factor analysis to cross validate the 22-item assessment with a new sample of 303 athletes. Cross validation determined the removal of the judging and devaluing factor, therefore leaving a final 15-item 4-factor model of the CCBS (the final four factors indicated in the above section). Moreover, study three examined the invariance among the scores relative to sport type, gender, and the relationship between controlling and autonomy supportive behaviors. A final confirmatory factor analysis in study four was to use on another independent sample for cross validation of the 15-item 4-factor model of the CCBS.
For the current study, assessment of the internal consistency of the four subscales was conducted using Cronbach’s alpha analyses. Obtained scores ranged from a low of .81 to a high of .91, demonstrating acceptable levels of inter-item reliability (Nunnally and Bernstein, 1994).

**Self-Regulated Learning Self-Report Scale**

The Self-Regulated Learning Self-Report Scale (SRL-SRS; Toering et al., 2012) is a multidimensional self-report measure that assesses athletes’ disposition to self-regulate their sport learning. The SRL-SRS consisted of 50 items and six subscales: planning, self-monitoring, evaluation, reflection, effort and self-efficacy. The SRL-SRS was then reduced and modified by Toering and colleagues to make a football specific scale.

The development of the football specific measure (Toering, Jordet, and Ripegutu, 2013) started with a pool of 67 items which was narrowed down and validated at 22 items representing 3 subscales pertaining to aspects of planning, evaluation, and reflection, which is more consistent with the cyclical nature of SRL (Cleary and Zimmerman, 2001; Zimmerman, 1998b, 2000). Questions are answered based on a 5-point Likert scale where 1 = never, 2 = seldom, 3 = sometimes, 4 = often, and 5 = always. Results from the exploratory factor analysis were proven valid through a confirmatory factor analysis and indicated a good model fit. The results indicate a reliable and valid measure of self-regulated learning. The new SRL scale has been validated as a football specific measure for athletes 13 and older. The current research study involved a modification of the football specific measure in order to assess self-regulated learning across a range of sports and with a sample of collegiate athletes. Assessment of the internal consistency of the three subscales for the current study revealed acceptable levels inter-item reliability with alpha values ranging from .80 to .87 (Nunnally and Bernstein, 1994).

**Statistical Analyses**

Data obtained from the in-person and online collection procedures were input into a file and analyzed using the Statistical Package for the Social Sciences (SPSS) software system. These analyses began with descriptive and correlational procedures. Main study analyses were conducted using a within-person cluster analysis designed to identify clusters of athletes who shared a similar profile in regard to their perceptions of their coaches’ leadership style and behaviors. Following this classification system, a one-way multivariate analysis of variance
(MANOVA) was conducted to determine whether the athlete clusters or groups differed from each other in their ability to self-regulate their sport-specific learning.
Chapter 4: Results

As noted in the previous sections, the purpose of this research study was to investigate hypothesized links between collegiate athletes’ perceptions of their coaches’ interpersonal leadership style and athletes’ self-regulated learning (SRL). Two specific hypotheses were forwarded. First, it was hypothesized that athletes who perceived that their coaches exhibited an autonomy-supportive leadership style would also perceive higher ability to self-regulate their sport specific learning as compared to athletes who perceived lower levels of coaches’ autonomy support. In contrast, it was further hypothesized that athletes who perceived that their coaches exhibited a controlling behavioral style would indicate an inability to self-regulate their sport specific learning as compared to their peers who did not perceive high levels of controlling coach behavior.

To examine these hypotheses, a variety of statistical procedures were used. The results of these procedures are presented in the following sections of this chapter. This begins with descriptive statistics, followed by a set of correlational and preliminary analyses. Finally, the primary analyses are presented in the last section.

Descriptive Statistics

Descriptive statistics (means and standard deviations) for all study variables are provided in Table 1 (Self-Regulated Learning Subscales) and Table 2 (Coaches’ Leadership Subscales). The descriptive data for the self-regulated learning subscales (Table 1) indicate that these collegiate athletes, as a group, scored slightly below the midpoint (a score of three on a 5-point scale) on SRL-Planning subscale ($M = 2.80$). However, the group scored above the midpoint on the Evaluation ($M = 3.68$) and Reflection ($M = 3.78$) subscales. Furthermore, the obtained score ranges reveal that the participants did exhibit use of a full range for the planning subscale but less so for the evaluation and reflection subscales. However, standard deviations for all three subscales do show some variability between athletes within the sample.

The descriptive data for athletes’ perceptions of coaches’ leadership styles and behaviors (see Table 2) was obtained by using two different questionnaires. The Perceived Interpersonal Behavior Scale includes two subscales (autonomy and controlling) that assess perceived coaches’ interpersonal style. As a group, the athletes in this study scored above the midpoint (a score of three on a 7-point scale) on the autonomy-supportive interpersonal style ($M = 3.49$) and
below the midpoint on the controlling style subscale \( M = 2.48 \). To put these descriptive results into perspective, the average response (mean value) for questions about controlling coaching was mostly between “Does Not Correspond At All” and “Corresponds Moderately”, whereas the average response for questions about autonomy-supportive coaching was mostly between “Corresponds Moderately” and “Corresponds Exactly”. However, the standard deviations for both subscales as well as the obtained score range indicate considerable variability between athletes in their perceptions of their coaches’ interpersonal style as measured by these two subscales.

The second scale used to measure athletes’ perceptions of their coaches’ behaviors was the Controlling Coaches Behavior Scale. This scale contains 15 items that are scored on a 7-point scale ranging between 1 (i.e., strongly disagree) and 7 (i.e., strongly agree). As shown in Table 2, the means for all four subscales were below the midpoint (a score of 4). However, again, the standard deviations and obtained range scores reveal considerable inter-individual variability as to how the athletes in this sample perceive their coaches to behave relative to four measures of a controlling leadership style.

**Correlational Analyses**

A series of univariate Pearson correlational analyses were conducted to provide an initial and preliminary assessment of the strength of the relationship between the two sets of variables in the study. The results of these analyses relative to the set of variables assessing athletes’ self-regulated learning (see Table 1) indicate positive but moderate levels of association between all of the SRL variables in the data set. Specifically, athlete planning was significantly, positively, and moderately correlated to both evaluation (.57) and self-reflection (.56), and evaluation to self-reflection (.51).

Correlational coefficients for the various subscales measuring athletes’ perceptions of their coaches’ leadership style and behaviors (see Table 2) revealed a number of associations. Generally, a negative correlation was apparent when comparing the autonomy-support subscale to all controlling subscales. Furthermore, positive correlations are seen between all controlling subscales. Specifically, the autonomy-supportive subscale was negatively but moderately correlated with all controlling subscales with the exception of Controlling Use of Rewards subscale (-.12). Associational relationships between the controlling subscales were positive and
mostly ranged in the low (.17) to moderate category. One high correlation (.84) was found between the PIB controlling subscale and the CCBS Intimidation subscale.

Main Study Analyses

Cluster Analyses: A Person-Centered Approach

The primary purpose of this study was to determine whether collegiate athletes’ perceptions of their coaches’ leadership styles and behaviors would be related to the athletes’ own ability to self-regulate their sport specific learning. This purpose was assessed using a person-centered rather than a variable-centered approach. In a variable-centered approach, multivariate correlational or regression procedures would be used to assess the relationship between the two sets of variables (perceived coaching styles/behaviors and self-regulated learning) across all participants. However, in the contrasting person-centered approach, study participants are first categorized into groups based on their scores on the perceived coaching style/behavior scales, with each group containing those who exhibit a similar perceived coaching profile. These profile groups can then be compared in terms of the outcome variables of interest (e.g. levels of self-regulated learning).

To select or determine the profile comparison groups, simple data splitting measures can be used (e.g. mean/median split), but such methods often result in comparison groups that are not really conceptually different from each other. Another, and perhaps more conceptually accurate, method for identifying profile groups occurs through the use of a cluster analysis. Given that the univariate correlational analyses (see results in Table 2) indicated generally moderate correlations between the subscales scores on perceived coaching interpersonal styles and behavior, the use of cluster analysis was justified for the study. Therefore, such procedures were used to determine if the athletes in this sample could be classified into groups that exhibited similar patterns or profiles in regard to their perceptions of their coaches’ leadership styles and behaviors. This analysis began with standardization of scores. Then, a two-step cluster analysis procedure was initiated (Hair, Black, Babin, and Anderson, 2010). First, a hierarchal cluster analysis, using Ward’s method of cluster formation with squared Euclidean distance measures, was conducted to determine the number of clusters that best fit the data. The variables used in this analysis were the six scores assessing athletes’ perceptions of their coaches’ behaviors. This included four subscales from the CCBS as well as the two subscales from the Perceived Interpersonal Behavior Scale. The agglomeration schedule produced from the hierarchical
analysis as well as the results obtained from the dendogram indicated that a two-cluster solution was the most appropriate.

Following the two-step procedures outlined by Hair and colleagues (2010), a k-means cluster analysis was then conducted, and the results provided verification of the two-cluster framework. Descriptive data for the two clusters are presented in Table 3. A follow-up MANOVA conducted to compare the two cluster groups on the six positive intrapersonal processes of perceived coaching behavior variables indicated a significant difference between groups, Pillai’s Trace = .79, $F (6, 54) = 32.78, p < .00, \eta^2 = .79$. Examination of the individual F-values for all six variables (see columns in far right of Table 3) reveals that the cluster groups differed significantly on all of the clustering variables. In interpreting the results of the profiles, it is clear that participants in Group 1 scored very high on variables related to an autonomy-supportive coaching style and correspondingly very low on perceived controlling coaching behaviors. Thus, this group can be labeled as high in perceived autonomy-supportive interpersonal coaching style. In obvious contrast, participants in Group 2 scored very low on perceptions of autonomy-support and very high on perceptions of controlling interpersonal behaviors. Thus, this group can be labeled as high in perceived coaches’ controlling behavior. However, it should be also noted that the $\eta^2$ values in the far right column (Table 3) indicate that the biggest differences between athletes comprising the two clusters was in their scores on the controlling subscale from the PIB ($\eta^2 = .69$) and in the intimidation subscale on the CCBS ($\eta^2 = .65$). Thus, these two variables were the ones that most distinguished the two profiles (groups) of athletes. In contrast, the two groups differed the least on the “controlling rewards” from the CCBS. Based on Cohen’s (1988) specifications for the interpretation of effect sizes, the athletes in the two cluster groups exhibited large-sized differences on all but one of the subscales. Thus, it seems that the two groups of athletes identified through the cluster analysis very much differ from each other in their perceptions of their coaches’ leadership styles and behaviors.

**Comparison of Clusters on Self-Regulated Learning**

To test the hypothesis that collegiate athletes who differ from each other in their perceptions of their coaches’ behavior also differed in relation to their engagement in self-regulatory behaviors, a one-way MANOVA was conducted to compare the two cluster groups on the three self-regulated learning subscales. The independent variable for this analysis was cluster group, and the dependent variables were the three scores form the Self-Regulated Learning
Scale. Results indicated a significant cluster group main effect, Pillai’s Trace = .11, $F(3, 57) = 3.32, p < .03, \eta^2 = .18$. Examination of the parameter estimates and univariate F-values (see Table 4) indicated that the cluster groups differed significantly for one of the three self-regulated learning variables (Planning). As indicated in Table 4, the other two variables (Evaluation and Self-Reflection) were not significant. However, the observed power for these statistical tests were quite low (.25) due to low sample and cell size.

As a general summary, then, it does appear that the two clusters of collegiate athletes representing different perceptions of their coaches’ leadership style and behavior do vary with regard to their self-perceptions of self-regulated learning. In particular, the athletes who perceive that their coaches’ are high in autonomy-support also scored higher on planning in their self-perceptions of self-regulated learning than did their peers who perceived that their coaches exhibited a coaching behavioral style that was high in control.
Chapter 5: Discussion

The aim of this research study was to investigate the hypothesized links between collegiate athletes’ perceptions of their coaches’ interpersonal leadership style and athletes’ self-regulated learning. First, it was hypothesized that athletes who perceived that their coaches exhibited an autonomy-supportive leadership style would also perceive higher ability to self-regulate their sport specific learning as compared to athletes who perceived lower levels of coaches’ autonomy support. In contrast, it was further hypothesized that athletes who perceived that their coaches exhibited a controlling behavioral style would indicate an inability to self-regulate their sport specific learning as compared to their peers who did not perceive high levels of controlling coach behavior.

The results showed some support for the study’s hypotheses. The two-stage cluster analysis revealed that athletes in this sample could be divided into two contrasting groups based on their perceptions of coach behavior. Group 1 perceived their coaches to be high in autonomy-supportive behaviors and low in controlling behaviors. This group was therefore labeled as high in perceived autonomy-supportive behavior. On the other hand, Group 2 perceived their coaches to be high in controlling behavior and low in autonomy-support. Thus, this group was labeled as high in perceived controlling behavior. Moreover, effect sizes indicated the two groups were distinctly different. Specifically, the subscales that most distinguished the two groups of athletes were the controlling subscale from the PIB and the intimidation subscale from the CCBS.

After the groups were distinguished as indicated above, the two clusters were compared in their self-perceptions of their ability to self-regulate their sport learning. A one-way MANOVA was used to compare the clusters to the responses on the SRL scale. The results showed a significant cluster group main effect, and follow-up examination of the univariate F-values showed that the two clusters differed significantly from each other on the Planning subscale. Specifically, the group that perceived their coaches to be high in autonomy-support scored high in their ability to plan for practice experiences, while Group 2 scored significantly lower on their planning abilities for practice. No differences were found between the cluster groups on the two other self-regulation subscales.

From a theoretical perspective, Mageau and Vallerand (2003) described an autonomy-supportive coaching style to include four particular leader behaviors. These include: (a)
providing choice for athletes within specific rules and limits; (b) providing a rationale for tasks and limits; (c) acknowledging the other person’s feelings and perspectives; and (d) providing athletes with opportunities for initiative taking and independent work. Additionally, three non-controlling components were described as the provision of non-controlling competence feedback, the avoidance of controlling behaviors, and the reduction or prevention of ego-involvement (Mageau and Vallerand, 2003). The controlling interpersonal behavior style, on the other hand, is characterized by using tangible rewards to control athletes’ behavior, providing high frequencies of controlling feedback, exhibiting excessive personal control, using intimidation as a means of communication, promoting high levels of ego-involvement, and utilizing conditional regard (Bartholomew, Ntoumanis, and Thøgersen-Ntoumani, 2009).

Coaches have been advised to put forth efforts to minimize maintaining overt control over athletes, criticize athletes’ efforts, use tangible rewards in motivating athletes and promote ego-involvement (Mageau and Vallerand, 2003) because controlling behaviors and controlling use of rewards have been found to negatively impact perceived autonomy and competence, subsequently decreasing intrinsic motivation (Hollembeak and Amorose, 2005; Matosic, Cox, and Amorose, 2014). Holistically, maintaining autonomy-supportive behaviors will nurture a positive motivational climate where constructive perceptions of these behaviors aid in the athletes’ self-perceptions of not only the basic psychological needs but also performance, psychosocial well-being, and the subsequent levels of intrinsic motivation.

Self-regulated learning, a psychological construct within the social-cognitive view of human learning, has recently been noted to be a significant construct within the physical activity domain (Kolovelonis and Goudas, 2013). Research has shown that self-regulatory skills increase concurrent with athletes’ level of sport expertise during practice experiences without the presence of a coach (Cleary and Zimmerman, 2001). However, it has been further indicated that coaches’ have great influence on athletes’ ability to self-regulate their thoughts, feelings, and actions (Callary and Durand-Bush, 2008) and coaches can nurture self-regulation through utilizing self-fulfilling cycles of SRL (Collins and Durand-Bush, 2014), which consists of a forethought phase, performance phase, and self-reflection phase (Zimmerman, 1998b).

It appears that the significant results of the current research is most connected within the forethought phase of SRL. The subcomponents of the forethought phase are goal-setting,
strategic planning, self-efficacy beliefs, goal orientation, and intrinsic interest. The results of this study indicate that athletes with high perceptions of autonomy-support also hold strong self-perceptions of planning their practice experiences. That is, athletes in Group 1 more often than not will have a clear goal for practice, will plan which skills he or she want to work on during practice, and will come to practice early to work on specific skills, among other factors outlined in the Planning subscale. The majority of research studies on athlete perception of coaching behavior are described as an antecedent to the relationship between the basic psychological needs and one’s level of motivation. Notably, athletes who perceive their coaches’ to be autonomy-supportive are more intrinsically motivated. Therefore, because the current study highlights the positive association between perceived autonomy-support and planning, the study indirectly underlined a commonality between strategic planning and intrinsic interest within the forethought phase based on the athletes’ perceptions of their coaches’ behavior.

Limitations of Study

Despite the significant findings of the current study, some limitations are evident. First, the sample of athletes that participated in the study was not ideal. Specifically, there was a low number of people which limits the power of the statistical analyses. Second, the sample was limited to collegiate athletes at the Division 1 level. This calls for possible difficulty in generalizing the results to other athlete groups (e.g. other collegiate levels, youth level athletes, high school level athletes).

A second limitation relates to the measurement instruments used. Some of them were developed and initially designed for athletes at the youth level. For example, both the Assessment of Perceived Interpersonal Behaviors (PIB; Pelletier et al., 2002) and the CCBS (Bartholomew et al., 2010) were developed primarily for and with the high school age athlete.

A third limitation pertains to the fact that more female athletes participated in the study compared to males. Although male and female athletes certainly may respond in the same or similar way to coaches’ leadership styles and behaviors, future researchers should include a broad range of study participants in terms of both gender and sport type.
Finally, a clear limitation to the study is due to the fact that the study design was descriptive only. Thus, no causal connections between coaches’ interpersonal style and their athletes’ self-regulatory processes can be assumed.

**Future Research Directions**

This study was the first (or, certainly, one of the first) that investigated the relationship between athletes’ perceptions of their coaches’ leadership behavior in relation to their ability to self-regulate their sport specific learning. Though the study did reveal some interesting findings, continued research on this topic is important.

As implied in the prior section, a major limitation to the study was due to the fact it was not longitudinal in nature. A longitudinal study would be better able to track not only how much fluctuation persists throughout the course of a season and possible variations within male versus female teams, or variations within a particular sport context (e.g. individual compared to team sports).

In order to gather athletes’ perceptions of coach behavior, the PIB (Pelletier et al., 2002) and the CCBS (Bartholomew et al., 2010) surveys were utilized to represent the spectrum of coach behavior. The CCBS went through in-depth testing and represents a significantly valid and reliable measure that led to particularly interesting results in the current study (i.e. controlling perceptions highest in the intimidation subscale). On the other hand, though the PIB has been referred as an applicable measure (Horn, 2008), a new direction for research in the autonomy-support literature is to develop a more specific measure further highlighting the major components of autonomy-supportive behaviors. That is, a sport specific questionnaire based on the theoretical components of autonomy-support such as providing choice within specific rules and limits, provide a rationale for tasks and limits, acknowledge the other person’s feelings and perspectives, and provide athletes with opportunities for initiative taking and independent work (Mageau and Vallerand, 2003), should be created to better assess the spectrum of coach behavior.

Additionally, imminent research assessing perceived autonomy-support in comparison to individual SRL should include the constituent of coach structure. It has been noted in the sport literature that coach implemented structure can aid the development of athlete competence, and
said coach’s involvement can further promote feelings of relatedness (Mageau and Vallerand, 2003). Moreover, in the education literature, it has been found that the positive effects of an autonomy-supportive style, when coupled with increased structure, can provide learners with student-centered feedback, help and optimal challenge (Sirens et al., 2009). The factor of coach support could incorporate important connections to aid the effectiveness of perceived autonomy-support.

**Practical Applications**

In viewing this research through a pedagogical lens, it is clear that coaches are individuals within a profession that functions within the education domain. That is, coaches are educators whose central purpose is to help aid their athletes in their sport learning. The current research study expands on this conceptualization through an analysis of athletes’ perceptions of how they think their coaches should teach. Further, this research is based within the motivational model of coaching. Particularly, it is not just about teaching the topic at hand (e.g. a volleyball serve, the block start in track and field), but teaching to aid in the development of intrinsic interest of the discussion topics.

The results of the current research provides validation to an adoption of an autonomy-supportive method of interaction because this method helps nurture athletes’ intrinsic drive to self-regulate their sport performance during practice experiences. If an athlete takes the initiative to learn a sport technique or tactic on their own regard, they are one step closer to achieving the task because they have shown interest in the fundamental understanding. However, gaining intrinsic interest is not something that can be simply told. That is, as a coach you cannot simply tell your athletes to be more engaged or motivated when learning a sport task. In fact, depending on how you express the information athletes can potentially view the statement as trying to control their thoughts and perspective. Therefore, it is recommended that coaches should support their athletes’ learning through helping them attain the task on their own through the self-fulfilling cycle of SRL. More specifically, it is the structure of the learning environment alongside the SRL framework that yield increased autonomous motivation and positive learning performances in the practice environment.

Additionally, it is possible that adopting an autonomy-supportive interactional style is not an easy task to achieve based on the many situational and contextual factors that go into the
equation (e.g. coaching at the collegiate level can lead to more stressful environments due to the administrative pressure to win games, tournaments, conference, and national titles). Though the current research is specifically based on collegiate athletes’ perspectives for their sport learning, it is recommended that coaches utilize these findings to help aid their own sport learning.

Perhaps you have prior sport experience that brought you into the coaching profession. Possibly you were a student of your sport and enjoyed the learning process. Nonetheless, coaches can personally adopt the SRL model in their own learning environment to help systematically organize their coaching effectiveness. In so doing, coaches will gain perspective as one persist in teaching their athletes how to be self-regulators in the coach-created motivational climate.

In conclusion, this study is important when considering the ways in which coaches’ are perceived in their sport instruction. A coach’s leadership style can be perceived in many and often disparate ways. The results of this study have demonstrated that collegiate athletes can be grouped into two categories: Group 1 being high in perceived autonomy-supportive coach behavior and Group 2 high in perceived controlling coach behavior. Moreover, athletes who experience high perceived autonomy-support also show higher abilities to self-regulate their sport learning. This study specifies an indirect association between intrinsic interest and strategic planning within the forethought phase of the self-fulfilling cycle of SRL. Moreover, this study extends the current literature in that it provides the psychological construct of SRL that is associated with the spectrum of coaching behavior in the sport domain.
References


Table 1 - Descriptive Data for Self-Regulated Learning

<table>
<thead>
<tr>
<th></th>
<th>SRL-Planning</th>
<th>SRL-Evaluation</th>
<th>SRL-Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRL – Planning</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRL – Evaluation</td>
<td>.57**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>SRL – Reflection</td>
<td>.56**</td>
<td>.51**</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>2.80</td>
<td>3.68</td>
<td>3.78</td>
</tr>
<tr>
<td>SD</td>
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<td>0.65</td>
<td>0.55</td>
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<tr>
<td>Obtained Score Range</td>
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<td>2.17 – 5</td>
<td>2.89 – 5</td>
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<tr>
<td>Possible Score Range</td>
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<td>1 – 5</td>
<td>1 – 5</td>
</tr>
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*p < .05.

**p < .01.
Table 2 - Descriptive Data for Perceptions of Coach Behavior

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<thead>
<tr>
<th></th>
<th>PIBAuto</th>
<th>PIBCont</th>
<th>CCBSRew</th>
<th>CCBSNeg</th>
<th>CCBSInt</th>
<th>CCBSCont</th>
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<tbody>
<tr>
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<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PIB – Controlling</td>
<td>-.70**</td>
<td>-</td>
<td></td>
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</tr>
<tr>
<td>CCBS – Controlling Use of Rewards</td>
<td>-.12</td>
<td>.19</td>
<td>-</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CCBS – Negative Conditional Regard</td>
<td>-.65**</td>
<td>.65**</td>
<td>.22</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCBS – Intimidation</td>
<td>-.68**</td>
<td>.84**</td>
<td>.27*</td>
<td>.72**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CCBS – Excessive Personal Control</td>
<td>-.67**</td>
<td>.64**</td>
<td>.17</td>
<td>.60**</td>
<td>.76**</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>3.49</td>
<td>2.48</td>
<td>2.39</td>
<td>3.40</td>
<td>2.44</td>
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<td>SD</td>
<td>0.80</td>
<td>0.96</td>
<td>1.12</td>
<td>1.74</td>
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<td>1 - 5.25</td>
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<td>1 - 7</td>
<td>1 - 7</td>
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*p < .05.
**p < .01.
Table 3 – Cluster Group Differences for Perceptions of Coach Behavior

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 Autonomy-Support (n = 35)</th>
<th>Cluster 2 Controlling (n = 26)</th>
<th>$F$ (df = 1, 59)</th>
<th>$\eta^2$</th>
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</thead>
<tbody>
<tr>
<td>PIB – Autonomy</td>
<td>3.99 (.58) z = .62</td>
<td>2.82 (.50) z = -.84</td>
<td>67.26**</td>
<td>.53</td>
</tr>
<tr>
<td>PIB – Controlling</td>
<td>1.79 (.46) z = -.71</td>
<td>3.39 (.62) z = .96</td>
<td>133.10**</td>
<td>.69</td>
</tr>
<tr>
<td>CCBS – Controlling Use of Rewards</td>
<td>2.14 (.96) z = -.22</td>
<td>2.72 (1.25) z = .30</td>
<td>4.19*</td>
<td>.07</td>
</tr>
<tr>
<td>CCBS – Negative Conditional Regard</td>
<td>2.35 (1.23) z = -.60</td>
<td>4.81 (1.26) z = .81</td>
<td>58.38**</td>
<td>.50</td>
</tr>
<tr>
<td>CCBS – Intimidation</td>
<td>1.39 (.53) z = -.69</td>
<td>3.86 (1.27) z = .92</td>
<td>107.19**</td>
<td>.65</td>
</tr>
<tr>
<td>CCBS – Excessive Personal Control</td>
<td>2.21 (1.23) z = -.61</td>
<td>4.76 (1.33) z = .82</td>
<td>59.66**</td>
<td>.50</td>
</tr>
</tbody>
</table>

*p < .05.

**p < .00.
Table 4 – Cluster Group Differences for Self-Regulated Learning

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1 Autonomy-Support (n = 35)</th>
<th>Cluster 2 Controlling (n = 26)</th>
<th>$F$ (df = 1, 59)</th>
<th>P-value</th>
<th>$\eta^2$</th>
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<tbody>
<tr>
<td>SRL – Planning</td>
<td>3.12 (.62)</td>
<td>2.38 (.97)</td>
<td>7.13</td>
<td>.01</td>
<td>.11</td>
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<td>SRL – Evaluation</td>
<td>3.78 (.60)</td>
<td>3.56 (.71)</td>
<td>1.70</td>
<td>.20</td>
<td>.03</td>
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<td>SRL – Reflection</td>
<td>3.85 (.47)</td>
<td>3.68 (.64)</td>
<td>1.58</td>
<td>.21</td>
<td>.03</td>
</tr>
</tbody>
</table>
Appendix A

COACHES’ LEADERSHIP STYLES AND INTERPERSONAL BEHAVIOR

Directions: This questionnaire has been designed to investigate your ideas about your coach’s leadership style and interpersonal behavior during practice. Please provide your responses based on the coach who you spend the most time with during practice. There are no right or wrong answers. Using the scale below, please indicate the degree to which the following coaching behaviors correspond to your coach. Circle the number that corresponds to your opinion.

<table>
<thead>
<tr>
<th>Please indicate to what extent your coach behaves as described in the items below:</th>
<th>Does Not Correspond At All</th>
<th>Corresponds Moderately</th>
<th>Corresponds Exactly</th>
</tr>
</thead>
<tbody>
<tr>
<td>The feedback I receive from my coach is constructive in helping me make improvements.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>When I ask my coach to help me solve problem, he or she asks me what I think before giving me his or her opinion.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My coach imposes his-her opinions on me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>The feedback I get from my coach is basically useless criticisms.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My coach pressures me to do what he or she wants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My coach consults me before making a decision on how a problem of mine should be solved.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My coach is controlling toward me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>My coach provides me with lots of opportunities to take personal decisions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Appendix B

COACHES’ LEADERSHIP STYLES AND INTERPERSONAL BEHAVIOR

Directions: This questionnaire has been designed to investigate your ideas about your coach’s leadership style and interpersonal behavior during practice. Please provide your responses based on the coach who you spend the most time with during practice. There are no right or wrong answers. Using the scale below, please indicate the degree to which you agree or disagree with the statement regarding your coach’s interaction style. Circle the number that corresponds to your opinion.

<table>
<thead>
<tr>
<th>Please indicate how much you agree or disagree with each statement:</th>
<th>Strongly</th>
<th>Neutral</th>
<th>Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>My coach is less friendly with me if I don’t make the effort to see things his/her way.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach shouts at me in front of others to make me do certain things.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach only uses rewards/praise so that I stay focused on tasks during training.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach is less supportive of me when I am not training and competing well.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach tries to control what I do during my free time.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach threatens to punish me to keep me in line during training.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach tries to motivate me by promising to reward me if I do well.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach pays me less attention if I have displeased him/her.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach intimidates me into doing the things that he/she wants me to do.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach tries to interfere in aspects of my life outside of my sport.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach only uses rewards/praise so that I complete all the tasks he/she sets during training.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach is less accepting of me if I have disappointed him/her.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach embarrasses me in front of others if I do not do the things he/she wants me to do.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach only uses rewards/praise to make me train harder.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My coach expects my whole life to center on my sport participation.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Appendix C

ATHLETES' SELF-REGULATED LEARNING

**Directions:** This questionnaire has been designed to investigate your ideas about how you self-regulate your sport learning during practice. There are no right or wrong answers. Using the scale below, please indicate the degree to which you perform the following statements. Circle the number that corresponds to your opinion.

<table>
<thead>
<tr>
<th>Please indicate the degree to which you perform the statements as described in the items below:</th>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each practice session I think about both my strengths and weaknesses and of ways that I can improve them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>During each practice session I check whether I make progress in my technical or tactical skills.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I know my strengths and weaknesses and at each practice session I plan how I can improve them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>During each practice session I keep track of my sport performance relative to my practice goal (so that I know where I stand).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Each practice session I try to identify my strengths and think about ways to improve these even more.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Each practice session I work on my strengths and weaknesses because I believe in my potential as an athlete.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Each practice session I focus on my practice goal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>During each practice session I check what I still have to do to reach my practice goal.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Each practice session I try to identify my weaknesses and think about how to improve these.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Each practice session I think back and evaluate whether I did the right things to become a better player.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>After each session I think back at situations I’ve been through during practice and use this information to practice specific situations either alone or together with others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Each practice session I keep track of my performance during practice, so that I can see which technical or tactical skills I must improve.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td></td>
<td>1</td>
<td>2</td>
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<td>4</td>
<td>5</td>
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<tr>
<td>------------------------------------------------------------------</td>
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</tr>
<tr>
<td>After each practice session I think back and evaluate whether I</td>
<td></td>
<td></td>
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<tr>
<td>did the right things to reach my practice goal.</td>
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<tr>
<td>After each practice session I think about what I did right and</td>
<td></td>
<td></td>
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<tr>
<td>wrong during the session.</td>
<td></td>
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<tr>
<td>After each practice session I think back at specific practice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>situations and what I did right and wrong.</td>
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<tr>
<td>I have a clear goal for each practice session.</td>
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<tr>
<td>Before each practice session I plan which skills I want to work</td>
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<td></td>
<td></td>
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<tr>
<td>on during the session.</td>
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<tr>
<td>Each practice session I use information from TV/internet/live</td>
<td></td>
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<tr>
<td>competitions to become a better athlete.</td>
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</tr>
<tr>
<td>Before each practice session I plan my actions relative to the</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>goal I want to attain during the practice session.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Each practice session I use information from books, magazines,</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>and interviews about elite players to develop myself as an</td>
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<tr>
<td>athlete.</td>
<td></td>
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<tr>
<td>I come early for each practice session in order to work on</td>
<td></td>
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<tr>
<td>specific skills.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>After each practice session I stay to work on specific skills.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

In Person Research Consent Form

Hello. My name is Jordan Goffena. I am a graduate student in the Department of Kinesiology and Health at Miami University in Oxford, Ohio. I am here today to ask each of you to participate in a research study that I, along with Dr. Horn (a professor in the KNH Department at Miami University), are conducting to find out how athletes perceive their coach’s leadership style and behaviors in practices and how they self-regulate their learning during practices, and their thoughts on athletic ability.

To be a participant in this study, you will need to fill out this survey that consists of a number of questionnaires asking you questions about yourself and your coach. Filling out this set of questionnaires should take you about 20 minutes.

You should know that no one other than our research team will ever see your answers. We are not even asking you to tell us your name, your school's name, your uniform number, or the position you play. Thus, no one (including ourselves) will be able to identify what answers you, as an individual athlete, provided to our questions. We do hope to write a paper or papers describing the results of this study. These papers would be published in research journals, but your name, your coach's name, and your school's name would never be identified because we are not even collecting this information.

It is also important for me to tell you that you do not have to participate in this study. That is, if you do not want to fill out the set of questionnaires, you do not have to do so. Also, if you start filling out the questionnaires and don't want to finish, you can quit at any time. We would then destroy any information you had provided to that point.

We would really appreciate your help with this study as we are trying to find out more about the factors that affect college athletes' ability to self-regulate their learning during practice. We are asking you, as athletes, for this information because you are in the best position to tell us about your experience because you are directly living it.

If you do choose to participate in this study and to complete this survey, be assured that any questions or complaints you might have about your participation in this study can be directed to the Office for the Advancement of Scholarship and Teaching at Miami University (513-529-3734) or at <humansubjects@miamioh.edu>.

Furthermore, any questions that you have about the study either now or later can be directed to:

Dr. Thelma Horn
KNH Department
Miami University
Oxford, OH 45056
Phone: 513-529-2723
Email: HORNTS@miamioh.edu
If you want to receive (via email or regular mail) a summary of the study results (for the entire sample of athletes), you can get such a copy by contacting Dr. Thelma Horn at the phone number or email address listed above.

By signing below, I have given my consent to participate as a subject in this study.

__________________________________________________________________________________

Signature of Athlete
Appendix E

Online Research Consent Form

This survey study is being conducted to find out how athletes perceive their coach’s leadership style and behaviors in practices and how they self-regulate their learning during practices, and their thoughts on athletic ability. To be a participant in this study will require the completion of a 20-minute survey that will ask you questions about yourself and your coach.

You should know that no one other than our research team will ever see your answers. We are not even asking you to tell us your name, your school's name, your uniform number, or the position you play. Thus, no one (including ourselves) will be able to identify what answers you, as an individual athlete, provided to our questions. We do hope to write a paper or papers describing the results of this study. These papers would be published in research journals, but your name, your coach's name, and your school's name would never be identified because we are not even collecting this information.

It is also important for me to tell you that you do not have to participate in this study. That is, if you do not want to fill out the set of questionnaires, you do not have to do so. Also, if you start filling out the questionnaires and don't want to finish, you can quit at any time. We would then destroy any information you had provided to that point.

Any questions or complaints you might have about your participation in this study can be directed to the Office for the Advancement of Scholarship and Teaching at Miami University (513-529-3734) or at <humansubjects@miamioh.edu>. Furthermore, any questions that you have about the study either now or later can be directed to: Dr. Thelma Horn (hornts@miamioh.edu), KNH Department, Miami University, Oxford, OH 45056. If you want to receive (via email or regular mail) a summary of the study results (for the entire sample of athletes), you can get such a copy by contacting Dr. Thelma Horn at the phone number or email address listed above.

If, after reading the above information, you are willing to participate in this online survey, then please click the "Submit" or "Proceed" button below to begin.
Appendix F

Initial Email Sent to Coach

Hello. My name is Jordan Goffena. I am a graduate student in the Department of Kinesiology and Health at Miami University in Oxford, Ohio. In addition, I am in my third year as the assistant men’s track and field coach at Miami University. As a collegiate coach, I realize how tough it can be to balance the multitude of duties each and every college coach must attend. Moreover, due to the nature of our profession, it is often difficult to highlight that we as coaches are educators who have the ability to significantly help our athletes’ with their sport learning.

The purpose of this email is to ask for your help in forwarding a research study to the student-athletes you lead. The study aims to discover the relationship between athletes’ perceptions of coaching leadership styles and their ability to self-regulate their sport specific learning, along with athletes’ thoughts on athletic ability.

Legendary track coach Bill Bowerman strongly believed that teaching is at the root of all good coaching. This research aims to extend the current research on coaching effectiveness that will help coaches’ with their teaching and instruction. To that end, the survey athletes fill out will be completely anonymous. Your athletes’ names, jersey number, or position, along with the name of your institution will NOT be collected in this research. Moreover, there will be no comparison between sports teams or institutions. All responses will be collected and generalized across all sports and specified toward NCAA Division 1 Midwestern institutions. Again, this research aims to aid coaches’ in their effectiveness as instructors and your athletes’ responses will be completely anonymous.

If, after reading the above information, you are willing to pass this online survey to your athletes, then please reply to this email with confirmation of your involvement and I will provide you with the information to forward to your athletes!

Thank you for your time and I hope to hear back from you soon,

Coach Jordan Goffena
Appendix G

Email Forwarded By Coach to all Athletes on Team

Hello. My name is Jordan Goffena. I am a graduate student in the Department of Kinesiology and Health at Miami University in Oxford, Ohio. I have asked your coach to send you (and your teammates) this email so that I can ask all of you to participate in a research study that I and Dr. Horn (a professor in the KNH Department at Miami University) are conducting to find out how athletes perceive their coach’s leadership style and behaviors in practices and how they self-regulate their learning during practices, and their thoughts on athletic ability.

To be a participant in this study, you will need to fill out an online survey that consists of a number of questionnaires asking you questions about yourself and your coach. Filling out this set of questionnaires should take you about 20 minutes, and we are not asking for your name, your uniform number, your school names or the position you play. Furthermore, the answers you provide will not be made available to anyone other than members of our research team.

We would really appreciate your help with this study as we are trying to find out more about the factors that affect college athletes' ability to self-regulate their learning during practice. We are asking you, as athletes, for this information because you are in the best position to tell us about your experience because you are directly living it.

If you do choose to participate in this study and to complete the online survey, be assured that any questions or complaints you might have about your participation in this study can be directed to the Office for the Advancement of Scholarship and Teaching at Miami University (513-529-3734) or at <humansubjects@miamioh.edu>.

Furthermore, any questions that you have about the study either now or later can be directed to:
Dr. Thelma Horn (hornts@miamioh.edu)
KNH Department
Miami University
Oxford, OH 45056

If you want to receive (via email or regular mail) a summary of the study results (for the entire sample of athletes), you can get such a copy by contacting Dr. Thelma Horn at the phone number or email address listed above.

If, after reading the above information, you are willing to participate in this online survey, then please click the link provided below.

https://miamioh.qualtrics.com/SE/?SID=SV_9Zy1aAXtMiYhElID