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Jonathan M Burg

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M.S. degree in Kinesiology

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THE RELATIONSHIP BETWEEN THE QUALITY OF THE COACH-ATHLETE
RELATIONSHIP AND PERCEPTIONS OF THE MOTIVATIONAL CLIMATE

By

Jonathan M. Burg

A THESIS

Submitted to
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ABSTRACT

THE RELATIONSHIP BETWEEN THE QUALITY OF THE COACH-ATHLETE RELATIONSHIP AND PERCEPTIONS OF THE MOTIVATIONAL CLIMATE

By

Jonathan M. Burg

Sport psychology researchers have developed an approach to leadership involving the investigation of interpersonal relationships between coaches and athletes. The recently developed 3 C's model operationally defines the coach-athlete relationship through the constructs of closeness, commitment, and complementarity. A culturally sensitive instrument to investigate the coach-athlete relationship named the Greek Coach-Athlete Relationship Questionnaire (GrCART-Q) was developed. The instrument has yielded psychometric support within Greek samples, although further testing among unique populations is essential. Moreover, there is evidence that the motivational climate impacts the performance and satisfaction of an athlete, and that the coach is the primary facilitator of the motivational climate. Therefore, the purpose of the present study was twofold: (a) test the construct and criterion validity, and reliability of the GrCART-Q within an American intercollegiate population; and (b) test the relationship between the athletes' direct perspective of the coach-athlete relationship and their perceptions of the motivational climate. Second order confirmatory factor analysis validated the use of the GrCART-Q for the present study. Lastly, results indicated that when athletes perceive higher levels of the closeness, commitment, and complementarity within the coach-athlete relationship, athletes' will also perceive the motivational climate to be mastery-oriented.

DEDICATION

To my parents...

Who have supported and encouraged all of my dreams and aspirations.

To my family...

Whose unconditional love keeps me motivated.

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Chapter 1

Introduction

Sport psychology researchers have developed an eclectic approach to leadership studies over the last 30 years. Recently, these researchers have shifted from a traditional approach – focused on coaching behavior – to a more progressive approach involving the investigation of interpersonal relationships between coaches and athletes. This shift was necessary based on the realization that the basic unit of leadership, the coach-athlete relationship, is complex, dynamic, multifaceted, and reciprocal in nature (Poczwadowski, Barott, & Jowett, 2006). The goal of the research on interpersonal relationships in sport has been to understand the interconnected emotions and cognitions between coaches and athletes (Jowett & Cockerill, 2003). This coach-athlete dyad contains characteristics of other interpersonal relationships, such as marital, parental, friendship, and professional (Jowett & Timson-Katchis, 2005). Thus, the coach-athlete relationship can be personal and powerful for both parties involved, providing the athlete with a unique level of support, and promoting both physical and psychosocial development (Jowett, 2005). It is essential for coaches and athletes to understand the need for, and work toward, positive and beneficial relationship practices in order to have optimal sport experiences.

The importance of the coach-athlete relationship has been verbalized by prestigious coaches throughout the world. Mike Krzyzewski, Duke University mens' basketball coach, stated “almost everything in leadership comes back to relationships” (as cited in Jowett, 2006). Clive Woodward, former English National Rugby coach, recognized that a key ingredient in creating a successful team is the partnership between

the coach and athlete (Woodward, 2004). Manchester United Football Club manager, Alex Ferguson, also noted that loyalty and commitment are key elements of effective coaching (Ferguson, 2000). The coach-athlete relationship is important not only for the elite performer, but for youth athletes as well. Gould, Collins, Lauer, and Chung (2007) noted that effective communication between coaches and their athletes is a key component to learning sport skills as well as the development of life skills in youth sport.

The goal of leadership research in sport psychology is to better understand the dynamics of the coach-athlete relationship; a mutual and causal interdependence between coaches' and athletes' feelings, thoughts, and behaviors (Jowett & Ntoumanis, 2004; Kelley et al., 1983). Traditionally, sport psychology researchers took a behavioral approach to investigate the coach-athlete relationship. Behavioral researchers investigated the importance of the coach-athlete relationship, arguing that negative coach-athlete relationships cause poor performance, while positive coach-athlete relationships lower drop out rates in youth sport (Barnett, Smoll, & Smith, 1992). Furthermore, various aspects of the coach-athlete relationship that are initiated by the behavior of the coach (e.g., technical instruction, corrective instruction, reinforcement, communication, and decision making) are known to effect the athlete's perception of perceived self-competence, self-esteem, and indices of motivation (Amorose & Horn, 2001; Barnett et al., 1992; Black & Weiss, 1992). Approaching the study of leadership from a behavioral perspective provided a strong knowledge base in the area of coaching, although research has not fully begun to elucidate the interdependence between coaches' and athletes.

Wylleman (2000) has offered several explanations as to why leadership research has been confined to a focus on coach behavior, rather than interpersonal relations. First, ethical issues could play a role (e.g., confidentiality, team selection). Also, methodological barriers, specifically available instrumentation and issues surrounding confidentiality, are two empirical dilemmas. Furthermore, Wylleman postulates that sport psychology consultants view themselves as mental skills trainers, restricting their attention to performance issues, and overlooking how relationships affect the athlete. Lastly, the relationship lends itself to focus on the dominant member of the dyad. Recently, researchers have made valiant efforts to overcome these issues, and expand the empirical study of coach-athlete relationships by developing conceptual models and quantitative instruments (Jowett, 2006; Jowett & Ntoumanis, 2003; Poczwadowski, Barott, & Henschen, 2002; Poczwadowski et al., 2006).

Jowett and Cockerill (2003) developed the 3 C's Model in order to investigate interpersonal relationships in sport. The model is based on the definition of the coach-athlete relationship, a mutual and causal interdependence of feelings, thoughts, and behaviors (Jowett, 2003). These feelings, thoughts, and behaviors have been conceptualized by the constructs of closeness, commitment, and complementarity. Closeness, the emotional aspect, reflects how emotionally close the dyad is. This is measured through the expression of trust, respect, like, and appreciation. The cognitive aspect of the model is commitment, or the aspirations and plans of the coach and the athlete to preserve their relationship over time. For example, athletes may have the desire to play for their present coach into the future, or a coach may choose to keep in contact with his/her athletes after their competitive career has terminated. Lastly,

complementarity defines the behaviors of the relationship and is measured through the amount of responsiveness, friendliness, ease, and willingness within the coach-athlete interactions (Jowett, 2005). In the early stages of model development, co-orientation was an original construct used in the place of commitment. Co-orientation refers to the similarity of the coach's and athlete's perceptions of their relationship. Now, in the later stages of the model, co-orientation is used to assess the inter-perceptions of the coach-athlete dyad, rather than evaluate the quality of the relationship itself.

The 3 C's Model was utilized to qualitatively study a single coach-athlete dyad (Jowett, 2003). The purpose of the study was to explore the antecedents and consequences of the relationship. The dyad competed at the national and international levels, participated in an individual sport, had negative relationship issues, and previously won a silver medal in the Olympic Games. Jowett (2003) found that the 3 C's model was significant in determining the quality of the relationship. A lack of closeness was correlated with negative outcomes (e.g., feeling unattached, distressed, isolated, frustrated, angry). Low levels of co-orientation indicated negative relational outcomes (e.g., disagreement, imbalanced influence, unequal needs, and contention). Finally, in terms of complementarity, both the coach and athlete had a desire to act out negative behaviors (e.g., negatively framed statements, ineffectual support, opposed behaviors, power struggles). The athlete and coach were not able to communicate around these negative behaviors, causing a breakdown in the relationship. The qualitative findings revealed that communication, specifically disclosure, was a major indicator of relationship quality.

The investigation of the coach-athlete relationship was continued through interviewing 12 former Olympic medalists (Jowett & Cockerill, 2003). Both positive and negative feelings of closeness, co-orientation, and complementarity emerged. Results revealed that the coach-athlete relationship significantly impacted perceptions of performance, satisfaction, and personal development of the athlete. Phillippe and Seiler (2006) confirmed the association between the coach-athlete relationship with performance and satisfaction in a study of five Swiss international swimmers. Results signified that the swimmers reported that the coach-athlete relationship influenced their performance and athletic development.

Now that the association between the coach-athlete relationship and athletic performance and satisfaction has been established, it is vital to investigate other possible dynamics of the dyad. The primary researchers responsible for the development of the 3 C's model (Jowett & Cockerill, 2003) have recognized that there is a need for further exploration of the model and how the constructs are associated with other psychosocial outcomes. For example, areas which have been associated with leadership, and now warrant attention within coach-athlete relationship research are team cohesion (Jowett & Chaundy, 2004), self-efficacy (Feltz & Chase, 1998), coaching-efficacy (Feltz, Chase, Moritz, & Sullivan, 1999), and motivation (Jowett, 2005), as well as differences between the types of relationships formed based on gender, age, competitive level, and type of sport (LaVoi, 2007b). The present study will specifically analyze how perceptions of the coach-athlete relationship correlate with the motivational climate as created by the coach, within a unique population. One theoretical perspective that explains and predicts

motivation in terms of the motivational climate is the Achievement Goal Theory (AGT; Nicholls, 1984).

The AGT (Nicholls, 1984) focuses on motivational processes and achievement patterns associated with task and ego goals in judging ability. The AGT claims that an athlete's goal involvement in an activity is based upon goal-directed behaviors (e.g., choice, effort, persistence). These behaviors are driven by the athletes' desire to perceive themselves as competent at a task, and the need to avoid being perceived as incompetent. Athletes evaluate their competence in two different ways (i.e., task, ego); these are termed an athlete's achievement goal-orientation. Achievement goal-orientations refer to the extent to which the individual focuses on task and/or ego goals. Research shows that individuals who are task involved find success when they display high effort, improvement, learning, and mastery of a task. In contrast, individuals who are ego-involved are focused on normative referenced goals, such as comparison to others (Ames, 1992b).

The athlete's achievement goal-orientations and behaviors have been found to be effected by situational factors within the climate (Ames, 1992b). The motivational climate refers to perceptions of situational cues and environmental expectations that encourage a particular goal-oriented behavior. The motivational climate is defined as being either task/mastery and/or ego/performance involving. It is important to distinguish that the motivational climate will always have aspects of both ego- and task-involvement, although one will be emphasized more than the other. Investigators found that the climate is created and directly effected by significant others, specifically the coach (Pensgaard & Roberts, 2002). Furthermore, research reveals that differences in

situational characteristics (e.g., type of sport, competitive level, gender) and dispositional goal orientations (e.g., task, ego) influenced how athletes perceive leadership behaviors, and what type of leadership behaviors they prefer (Smith, Fry, Ethington, & Li, 2005). Concomitantly, it has been made clear that the behaviors of the coach have an effect on the motivational climate (Amorose & Horn, 2000; Chelladurai, 1984; Duda, 2001; Pensgaard & Roberts, 2002).

Research recognizes that the coach plays an integral role in creating the motivational climate (Pensgaard & Roberts, 2002). For example, Pensgaard and Roberts (2002) found that when athletes perceived their motivational climate to be task-oriented, they viewed the coach as providing high levels of training and instruction, and social support. In opposition, athletes in an ego-oriented climate perceived their coach as not being concerned with their welfare. Moreover, it has been documented that less satisfaction and athletic improvement is associated with ego-involved motivational climates (Balaguer, Duda, Atienza, & Mayo, 2002; Duda, 2001). These findings illustrated how important the coach is in creating a conducive motivational climate, and how the environment that athletes train and compete in have great impact on various psychosocial (e.g., perceived competence, intrinsic motivation) and performance outcomes (Ferrer-Caja & Weiss, 2000).

The association between the coach-athlete relationship and motivation was highlighted by Phillippe and Seiler (2006), who postulated that coaches were able to motivate their athletes through interpersonal techniques. Results indicated that coaches who effectively communicated and provided higher levels of social support positively facilitated the development of athletic performance and satisfaction. In addition, the level

of complementarity (how well the coach and athlete get along through overt behaviors) was integral to positive relationships characterized by coaches who served more as an advisor, rather than a dictator. These findings paralleled the arguments made by Iso-Ahola (1995) that the coach who serves as a facilitator, rather than controller, will produce athletes who are intrinsically motivated.

Dragoni (2005) investigated the link between relationship quality and motivation. The purpose of the study was to investigate the state goal orientations of business team members based on the type of interpersonal exchange that was experienced with the team leader. The findings revealed that the quality of the Leader Member Exchange (LMX; The development of differentiated role definitions between leader and subordinate) directly affected the achievement orientation of the subordinate. Specifically, high quality LMX led to members adopting the achievement goal orientation of the leader, as well as aligning more closely to the motivational climate (Dragoni, 2005). It has been suggested that investigating the relationship between the dynamics of the coach-athlete relationship and achievement motivation may be beneficial in sport (Jowett, 2006; Jowett & Ntoumanis, 2004; Poczwadowski et al., 2006). The purpose of the present study was to analyze how the quality of the coach-athlete relationship impacts athletes' perception of the motivational climate.

Achievement goal literature has found that when athletes perceive the motivational climate to be more task-involving, they are more likely to experience adaptive cognitive (e.g., choice), affective (e.g., satisfaction), and behavioral (e.g., effort) responses to their environment, than when immersed in ego-involving climates (Biddle, 2001; Duda, 2001; Ntoumanis & Biddle, 1999). Furthermore, task-involving climates

induce higher levels of satisfaction and enjoyment in participants compared to ego-involving climates (Seifriz, Duda, & Chi, 1992). These well-grounded findings compliment the recent recognition that closeness, commitment, and complementarity, within the coach-athlete relationship, are positively associated with overall satisfaction. In addition, Pensgaard and Roberts (2002) revealed that enjoyment in sport and competition is essential for elite level athletes, and that higher levels of enjoyment were experienced when their coaches created an accepting, caring and task-oriented climate. Additionally, their findings showed that the coach was the main “facilitator” of the motivational climate. Based on these results it was hypothesized that when the coach-athlete relationship was defined by greater amounts of commitment, closeness, and complementarity, the athlete would perceive the motivational climate to be more task-involved. If the athlete perceived lower levels of closeness, commitment, and complementarity, they would perceive the motivational climate as ego-involved.

This line of research is relatively young within the sport realm, and only six years ago was considered “unchartered territory” (Wylleman, 2000). Despite the significant amount of research which has greatly contributed to the understanding of coach-athlete relationships, there is substantial room for advancement from a methodological perspective (Poczwardowski et al., 2006). It has been a trend within the study of relationships to utilize qualitative methods, and apply the findings toward the development of conceptual and theoretical models. The primary researchers responsible for the development of the models have recognized the need for effective quantitative instrumentation to reliably and accurately assess the coach-athlete relationship.

Several questionnaires have served as key facilitators of quantitative interpersonal assessments, for example, the Sport Interpersonal Relationship Questionnaire (SIRQ; Wylleman, 1995), and the Leadership Scale for Sports (Chelladurai & Saleh, 1980; Wylleman, 2000). Although, researchers have been critical of these measures; for example, Wylleman (2000) stressed the importance of developing psychometric tools that measure variables specific to interpersonal behaviors. Also, scales that do specifically measure interpersonal behaviors have been criticized for lacking diversity concerning the units of analysis (e.g., coach vs. athlete) and the information being gathered (e.g., operational definition of the coach-athlete relationship) (Poczwardowski et al., 2006).

Based on the information gained from strategic qualitative studies, Jowett and Ntoumanis (2004) developed the Coach-Athlete Relationship Questionnaire (CART-Q). The questionnaire was originally composed of 23 items broken down into the original three constructs of the 3 C's model; namely, closeness, commitment, and co-orientation. Through a two stage study which employed two independent British samples, the validity of the CART-Q was tested through item analysis, as well as exploratory and confirmatory factor analyses. The factor analyses reinforced that closeness and complementarity are strong components of the relationship, although co-orientation was eliminated during the item and exploratory factor analyses. The researchers did, however, label the third component of the coach-athlete relationship that emerged as commitment. Also, the researchers eliminated 12 items, resulting in an 11 item quantitative interpersonal instrument.

Recently, Jowett and Ntoumanis (2003) developed a culturally sensitive version of the CART-Q, named the Greek Coach-Athlete Relationship Questionnaire (GrCART-

Q). This version of the CART-Q was tailored for Greek athletes, who primarily composed the samples employed during the early stages of quantitative interpersonal research in sport. The culturally sensitive version possessed minimal differences from the original CART-Q and contained two more items. Further, the GrCART-Q was the initial version of the Coach Athlete Relationship Questionnaire that measured both coaches' and athletes' direct and meta-perspective of closeness, commitment, and complementarity. The direct perspective measured the self-perceptions of the coach-athlete relationship, while the meta-perspective quantified the athlete's ability to assess their coach's perception of the relationship (Jowett, 2005). The psychometrics of the most recent version of the GrCART-Q were tested by Jowett (2006) in her study investigating the interpersonal features of the coach-athlete dyad, within a Greek population. The researcher employed a confirmatory factor analysis and Chi-square test of association to test the validity of the meta- and direct-perspective versions of the GrCART-Q. The results showed statistically significant evidence for the construct validity of the direct- and meta-perspective of the GrCART-Q (Jowett, 2006).

The updated version of the GrCART-Q has been subjected to the most psychometric inquiry and support. Furthermore, the units of analysis and variables tested in the GrCART-Q are the most developed and statistically supported. Replicating and extending past studies which have analyzed the psychometrics of the GrCART-Q would provide further psychometric support. Jowett and colleagues have recognized the need to ensure its validity and reliability across gender, race, competitive level, and cultural contexts (Jowett, 2006; Jowett & Ntoumanis, 2003, 2004). Moreover, Duda and Hayashi (1998) expressed the need for researchers to use caution when utilizing instruments that

have been developed in different cultures. There is evidence that the GrCART-Q will generalize to American cultures based on the strong influence the British culture has had on the instruments development. Therefore, it was crucial for the GrCART-Q's psychometric properties to be tested within specific populations to understand if the scale possesses external validity, what items of the scale are universal, and how a more concrete scale can be produced providing sufficient confidence in basic relationship research. Lastly, assessing the athletes' perceptions of the motivational climate based on relationship quality will diversify relationship research and will add to the predictive validity of the GrCART-Q. Therefore, the purpose of the present study was twofold: (a) test the psychometrics of the GrCART-Q within an American intercollegiate population; and (b) test if there was an association between the athletes' direct perspective of the coach-athlete relationship and their perceptions of the motivational climate.

Hypotheses

The following hypotheses are proposed to test the psychometric properties of the GrCART-Q.

H₁. Construct Validity of the GrCART-Q will produce CFI outputs greater than .70.

H₂. Tests of Criterion validity will result in correlation coefficients between .30 and .70.

H₃. Test of reliability will produce strong internal consistency, producing a Chronbach alpha greater than .70.

The following hypotheses are proposed to test the association between the direct perspective of the coach-athlete relationship and athlete's perception of the motivation climate.

H₄. There is a positive relationship between high amounts of perceived closeness within the coach-athlete relationship and a perceived task-oriented motivational climate.

H₅. There is a negative relationship between high amounts of perceived closeness within the coach-athlete relationship and a perceived ego-oriented motivational climate.

H₆. Male athletes would perceive lower levels of closeness than female athletes.

H₇. There is a positive relationship between high amounts of perceived commitment within the coach-athlete relationship and perceived task-oriented motivational climate.

H₈. There is a negative relationship between high amounts of perceived commitment with the coach-athlete relationship and perceived ego-oriented motivational climate.

H₉. Male athletes will not differ from female athletes in their perceptions of the commitment within the coach-athlete relationship.

H₁₀. There is a positive relationship between high amounts of perceived complementarity within the coach-athlete relationship and perceived task-oriented motivational climate.

H_{11} . There is a negative relationship between high amounts of perceived complementarity within the coach-athlete relationship and perceived ego-oriented motivational climate.

H_{12} . Male athletes will perceive lower levels of complementarity than female athletes.

Exploratory Questions

Q_2 : Will the gender of the coach have a significant effect on the athlete's direct perspective of the coach-athlete relationship, specifically closeness, co-orientation, and complementarity?

Chapter 2

Review of Literature

Leadership is one of the most commonly researched topics throughout a range of scholarly disciplines. As a result many theories that explain and predict leadership have been developed. The primary goal of this research is to understand an important element of leadership, the coach-athlete relationship. Relationship research has recently gained momentum, and sport psychology researchers who once approached the study of coach-athlete interactions from a leadership perspective, are now turning to relationship frameworks. Furthermore, there are many variables which affect the outcomes of leadership, as well as interpersonal relationships. One such factor is motivation. Therefore, the purpose of the present literature review is to (a) gain an understanding of leadership theory development, and how this theory has been applied to sport; (b) track the transition from leadership research in sport to relationship research, (c) understand how athlete motivation and perceptions of the motivational climate are impacted by the relationship formed between the coach and the athlete, and (d) review how theoretical aspects have been applied to understanding the coach-athlete relationship.

Theoretical Aspects of Leadership

Leadership research throughout history was approached from many different points of view and disciplines. The various areas have developed theoretical frameworks that present diverse conceptual definitions and highlight assorted features that contribute to effective leadership. The different research perspectives that will be discussed are trait/personality, behavioral, situational, contingency, and transactional/transformational. Although leadership is complex in nature, there are still commonalities upon which all

researchers agree: leadership takes place in a group setting, involves social influence between members of the group, and reflects the group desire to accomplish a mutual goal (Chemers, 2000). With this in mind, leadership can be defined as the behavioral process of influencing individuals and groups toward set goals (Weinberg & Gould, 2003).

Trait and personality perspective. Early research in leadership adopted a person-centered approach, which attempted to explain leadership from the leader's perspective. This viewpoint recognized that personality traits were correlated with leadership. Therefore, traits could be used as an explanation for why leaders emerged and were effective in certain situations (Chemers, 2000; Stogdill, 1974). The contention among personality and trait theorists was that great leaders possess innate characteristics. Examples of these characteristics were intelligence, alertness, insight, responsibility, initiative, persistence, self-confidence, and sociability (Stogdill, 1974). Researchers grounded in the trait / personality theory attempted to identify and isolate leadership traits or test the stability of leadership traits across various situations.

Stogdill (1974) recognized that personality and trait theories did not paint a complete picture of leadership, stating that a focus on central leadership traits was not useful. Stogdill (1974) postulated that leadership is a function of the situation. Specifically, that different leadership characteristics varied in effectiveness based on the requirements of the situation (Stogdill, 1974). Zaccaro, Foti, and Kenny (1991) reinforced Stogdill's findings in their study that examined the variance in leadership traits across different situations. The researchers had 108 undergraduate college students engage in four separate group tasks that required different types of leadership behaviors (e.g., initiating structure, persuasion, consideration, and production emphasis). The

researchers found that individuals, who were perceived as leaders in one situation, also emerged as leaders in different situations. However, in opposition to the trait/personality perspectives these leaders displayed the ability to monitor which traits to use across different circumstances (Zacarro et al., 1991).

Behavioral perspective. Due to the lack of effectiveness to predict leadership as a function of personality traits, researchers turned their attention to leadership behavior and style. The goal of the behavioral perspective was to identify behaviors that correlated with follower satisfaction and productivity (Chemers, 2000). Influential behavioral research was conducted by Hemphill (1950) who formulated the Leader Behavior Description Questionnaire (Hemphill, 1950) and administered it to military and industrial supervisors, subordinates, and observers. Hemphill (1950) found two different types of behaviors that were correlated with effective leadership - consideration and initiation of structure. He found an orthogonal relationship between these leadership behaviors, and argued that they were useful in classifying the different types of behaviors leaders could display. This explanation of leadership was found reliable in rating and categorizing leader behavior, although critiques highlight that it did not predict leadership effectiveness in terms of follower satisfaction and performance (Chemers, 2000). Due to this critique of the behavioral perspective, other leadership models such as the situational perspective were developed.

Situational perspective. Personality / trait and behavioral leadership theories did not directly take into consideration the situational factors that effect leadership. Therefore, the situational perspective was developed. Hersey and Blanchard (1982) developed the Situational Leadership Theory with the premise that leadership

effectiveness is enhanced when the leader utilizes a leadership style that matches the readiness, ability, and willingness of the followers. The Situational Leadership Theory identified four basic styles. These styles varied on the amount of task and supportive information the leader provides. The four types of behavior were classified as telling, selling, participating, and delegating. The telling behavior was classified by high amounts of task information and high amounts of supportive / interpersonal behavior. Selling behaviors were characterized by high amounts of task information and low relationship-oriented behavior. A participative leader would have a low emphasis on task-directed behavior and focus on supportive / interpersonal relationships. Lastly, delegation leadership was classified by low amounts of task information and supportive / interpersonal behavior (Chen & Silverthorne, 2005; Hersey & Blanchard, 1982).

The Situational Leadership Theory also took into consideration the development of followers (Chen & Silverthorne, 2005). The assertion was that the behaviors of the leader interact with follower readiness and willingness to accomplish specific tasks. Hersey and Blanchard (1982) found that readiness of the follower was the most significant indicator of what type of leadership behavior should be adopted. For example, if the follower has a low amount of readiness, leaders must direct them toward task-related behaviors. If the readiness increases, the leader should involve the follower in task-related decisions. It must also be noted that there is no best way to lead a group of followers, and the leader must consider readiness of their group in order to adopt the most suitable style (Chen & Silverthorne, 2005).

Another theory based in the situational perspective is the Normative Decision Theory (Vroom & Yetton, 1973). This model explored the effectiveness of leader

decision-making based strategies and situational factors. The Normative Decision Theory recognized that leaders have various types of decision-making strategies ranging on a continuum from directive to non-directive (Chemers, 2000; Vroom & Yetton, 1973). The theory held that more directive behaviors were suitable when the group task was clear and followers were supportive, and that participative approaches were suitable when the environment had an unclear task orientation and less order (Chemers, 2000; Vroom & Yetton, 1973).

Chen and Silverthorne (2005) recently tested the Situational Leadership Theory and analyzed how much impact the match between leadership style and follower readiness had on performance, satisfaction, and stress levels. The researchers mailed questionnaires to 350 selected managers who worked in a variety of disciplines. Through a variety of statistical correlations Chen and Silverthorne did not support the Situational Leadership Theory, finding no relationship between leadership style and follower readiness with increased performance, satisfaction, and lower levels of stress. Although, in support of the theory, the researchers found that the higher levels of leadership effectiveness were positively correlated with higher levels of influence that the leader had on followers (Chen & Silverthorne, 2005).

Contingency perspective. Fiedler's (1964) Contingency Theory was a novel approach to comprehending leadership, postulating that effective leadership was contingent upon the match between the leaders personality traits and the situation. Opposed to the situational models discussed prior, the contingency model affirmed that leaders do not have the power to change their behavior across situations (Leister, Borden, & Fiedler, 1977). The theory accepted two major traits that motivate leadership

behavior; namely, relationship motives and task motives. Fiedler (1964) developed the Least Preferred Co-worker (LPC) Scale to measure the motivational structure of the leader. Fiedler found that individuals who scored high on the LPC were relationship-motivated or primarily motivated by engaging in close interpersonal relationships and receiving group support. Individuals who scored low on the LPC were task-motivated and concerned with successful task performance (Fiedler & House, 1994).

The effectiveness of these two types of leadership styles was contingent on whether the situation provided the leader control and influence. This control and influence was determined by three reliable and measurable factors: leader-member relations, task structure, and position power. If the situation was very high or low in control, the task motivated leader would be most effective. The relationship-motivated leader would be most effective in situations of moderate control (Leister et al., 1977). The theory contends that leadership style and situational control could be matched by manipulating either the leader's personality or the situational control. Changing a leader's personality would be extremely difficult, although influencing the situation appeared to be more practical.

Comprehensive meta-analyses provided significant support for the fundamental principles of the contingency model (Fiedler & House, 1994). Furthermore, this perspective provided a base for other theories to emerge, for example the Path-Goal Theory (House, 1971). The Path-Goal Theory adopted a motivational perspective and identified that the leader's central goal was to motivate followers (House, 1971). The theory proposed that leaders motivated followers by aiding them to realize how their task-related performance could help them achieve their personal goals. The theory also

stated that followers would reach optimal motivation if they believed they could perform a task, their efforts would result in an outcome, and the pay off of the work was meaningful. Thus, the role of the leader was to help supply missing elements in the follower's environment and task, leading to higher levels of competence. This was accomplished through certain leadership behaviors. These behaviors were identified as either directive or supportive (Chemers, 2000; House, 1971). Empirical research of the theory found that directive behavior increased the follower's motivation when the environment was unstructured and the task was not clear. Conversely, when the task structure was clear, more supportive behaviors instilled higher levels of motivation. Finally, supportive behaviors had the most positive effects when the work environment was made boring or unpleasant (Fiedler & House, 1994).

The Path-Goal Theory explored leadership from the leader's point of view and also considered the needs and expectations of the follower (House, 1971). Griffin (1981) found that these needs and expectations affected what type of leader behaviors were most appropriate to implement. Individuals who were task and growth-oriented, as well as challenge-seeking, preferred more unstructured tasks and adversely responded to directive leadership behavior. Individuals who disliked change and were low growth-oriented, were more receptive to directive leader behavior and did not demand as much supportive behavior when the task at hand was less stimulating (Chemers, 2000). The Path-Goal Theory assumed that the motivation and performance of the follower was contingent upon the relationship between the follower and leader (House, 1971). Therefore, the leader must adopt the most effective leadership behavior based on the situation and the personality characteristics of the follower. Much like the other

contingency theories the Path Goal Theory has received a general amount of support (Chemers, 2000). Critiques of the model included the inability to explain the association between the leader and follower motivation, and the assumption that all leadership measures could be analyzed by solely studying the leader (House, 1994).

Transactional and transformational perspective. The transactional perspective not only discerned the leader's standpoint but also took the followers' view point into consideration. The central factor of transactional frameworks was that leadership behavior affected the self-esteem, motivation, and emotions of the follower (Fiedler & House, 1994). Furthermore, leadership was the interaction between the leader and follower, and was the extent to which the relationship was mutually beneficial. Transactional leaders tended to define the task at hand, clarify rules, expectations, and procedures, as well as identify a "fair deal" with their followers. Transactional leaders would also strive to form relationships that maximize benefits with the least amount of costs (Bass, 1985; Burns, 1978).

The most influential leadership researchers who utilized the transactional perspective were Graen and Cashman (1975), who presented the Vertical Dyad Linkage Model (VDL), which assumed that the leaders engaged in different leadership styles and behaviors with each individual follower. According to the theory, the leader provided certain members of the work group a higher level of exchange based on competence, skill, trustworthiness, and motivation of the follower. These followers who exceeded the benefits of the relationship and added to the success of the unit were chosen to be in the in-group (Graen & Cashman, 1975; Liden & Graen, 1980). Other members of the work group were viewed to be in the out-group. They would have more mundane, structured

tasks and less quality leader-follower exchange. Findings from research investigating the VDL model showed that relationship differentiation has major implications on task delegation, team building, unit functioning, and group performance (Liden & Graen, 1980). The vertical dyad linkage has received a substantial amount of support and is presently accepted as an effective framework to study leadership

Transformational leadership was developed as an extension of transactional leadership (Harter & Bass, 1988). The transformational perspective viewed the leader as a source of influence, who transformed the values and ideals of the followers to align with the goals of the group. Followers under the guidance of a transformational leader were motivated to engage in high levels of constructive, goal-oriented activities. House (1977) was one of the first researchers to explore this type of leadership with his review of charismatic leadership. He analyzed the behavior and characteristics of influential leaders of the past. House claimed that charismatic leaders possessed certain personal characteristics (morality, self-confidence, desire to influence others), engaged in specific types of behavior (dramatic presentation of goals, role modeling, image building, follower confidence, and arousal building), and were affected by certain situational influences (House, 1977).

Bass (1985) meticulously examined transformational leadership, consequently developing the Multi-Factor Leadership Questionnaire (MLQ). Through utilizing the MLQ to measure and test the effects of transformational leadership, Bass identified four leadership factors. The first factor branded was idealized influence or the extent to which the leader was viewed competent and trustworthy. The second was leader inspirational motivation, which referred to the leader's ability to express the emotional, moral, and

visionary goals of the group. The third factor identified was the amount of intellectual stimulation provided, or the leader's ability to promote followers to think independently and progressively in terms of the group goals. The last factor was termed individual consideration or the ability of the leader to relate to each follower's needs and goals. Bass (1998) found that leaders, who were rated high on the four factors and identified as transformational, were correlated with having work teams of high performance. This perspective of leadership has received a wide range of support for its generalizability to other disciplines (Chemers, 2000).

The development of leadership research has been methodical and organized. In an attempt to improve the study of leadership, theorists have built upon past work, creating a more dynamic understanding of the phenomenon. A handful of the theories, including the Behavioral, Vertical Dyad Linkage, Leader Member Exchange, and Personality and Trait, have been expanded upon and utilized presently. The theories presented have been researched in settings such as business, organization, and higher education. These were obvious areas to investigate leadership, although sport may prove to be an extremely efficacious research domain because of its inherent goal-oriented structure and hierarchical organization (e.g., coach-athlete).

Leadership Theory and Sport Psychology

The sport environment has been targeted as an extremely advantageous institution to implement the study of psychological factors (Chelladurai & Saleh, 1980; Smoll & Smith, 1989). The research conducted in sport psychology includes a wide array of theoretical underpinnings that have been borrowed from different sub-areas of psychology, particularly, social psychology. One social psychological topic that has been

identified as practical to study in the sport realm is leadership. When sport psychology was developing theoretically through the implementation of social psychological frameworks, there was a dearth of studies focusing on leadership. An explanation for this may be the lack of popularity of leadership research in social psychology. Not until the late 1980's and early 1990's did leadership research re-gain popularity in social psychology (Hogg, 2001). Since this re-emergence we have seen a paralleled interest in leadership research in sport psychology. The purpose of the following section was to analyze research in sport that has adopted frameworks developed in other disciplines, and review how this research has influenced the development of leadership theory in sport.

Trait and personality perspective. Early leadership research focused on identifying universal traits that could describe effective leaders. Although this perspective of leadership was not widely supported outside of sport, some sport researchers still adopted its underpinnings. Ware (1984) utilized this approach during his 1984 study of female coaches and athletic directors. The goal of the study was to pinpoint certain traits of effective leaders. The researcher found that the coaches who were more successful were dominant, sociable, self-confident, innovative, and creative (Ware, 1984).

Glenn and Horn (1993) also studied the psychological and personal predictors of leadership behavior amongst a sample of 106 female soccer players. The goal of the study was to identify the characteristics of individuals who emerged as leaders. The athletes were evaluated on their levels of anxiety, competence, sex-role orientation, and global self-worth, by themselves, their teammates, and their coaches. Athletes who received high ratings in leadership ability by their teammates tended to have high

competitive trait anxiety, masculinity, skill, and perceived soccer competence. Coaches claimed that leadership ability was a function of the athlete's skill level. A multivariate multiple regression analysis and a follow up canonical correlation analysis revealed that certain personal (e.g., athletic ability, team position) and psychological characteristics (e.g., masculinity and femininity orientation, high perceived competence) could be targeted as indicators of emergent leaders (Glenn & Horn, 1993).

Behavioral perspective. The goal of the behavioral perspective of leadership, which was to identify behaviors that correlate with follower satisfaction and performance, provided a conducive research paradigm for the sport environment. Sport psychology researchers have expanded upon the behavioral perspective, identifying leadership behaviors that can be used to categorize the different behaviors leaders exhibit in sport (Chelladurai & Saleh, 1980; Smoll & Smith, 1989). Also, sport leadership researchers have made valiant efforts in understanding how leader behaviors effect various psychosocial outcomes (e.g., perceived competence, intrinsic motivation, self-esteem, satisfaction) of the follower (Barnett et al., 1992; Ferrer-Caja & Weiss, 2000; Horn, 1985; Riemer & Chelladurai, 1995).

Williams, Jerome, Kenow, Rogers, Sartain, and Darland (2003) utilized the Coaching Behavior Questionnaire (CBQ) to find effective coaching behaviors in terms of athlete outcome variables. The research team found significant relationships between coaching behavior dimensions, measured by the CBQ, and athlete variables. The strongest correlation was the relationship between an athletes' tendency to have high competitive trait anxiety, high somatic anxiety, and low self-confidence with negative activation of coaching behaviors (e.g., inability to communicate, negative non-verbal

communication) (Williams et al., 2003). The CBQ proved a viable tool to assess leadership behaviors in sport, although it should be further tested to increase its validity and reliability. Lastly, the researchers concluded that the effects of coaching behavior are arbitrated by a wide range of situational factors (Williams et al., 2003).

Situational perspective. Sport psychology researchers have recognized the role that situational factors play in leadership. Case (1998) discerned the direction that classical leadership research was taking, and used principles from the behavioral perspective as well as the Situational Leadership Theory (Hersey & Blanchard, 1982). The purpose of the research project was to identify leadership behaviors using the LBDQ (Hemphill, 1950) and determine the differences between successful coaches at various competitive levels based on the amount of task and relationship behaviors they displayed. Findings revealed that as the competitive level increased coaches displayed higher levels of task behavior and lower levels of relationship behavior. These findings could be an outcome of the focus on winning at higher competitive levels rather than athlete development.

Early sport leadership research applied the classic Contingency Model of Leadership Effectiveness to the sport environment only to find little support. One such study was conducted by Danielson (1976). The purpose of the study was to apply the principles of the contingency model to the sport realm. The Least Preferred Co-worker scale was utilized to measure the motivational structure of the leader. Other variables included team atmosphere and structure of the task. These scores were correlated against coaching effectiveness in terms of the team's record. It was found that the more relationship-oriented the coach, the more successful the team. It was concluded that the

sport setting may not be the most appropriate environment to utilize the contingency model of leadership. This conclusion was based on the statistical power of the analysis (Danielson, 1976).

Vos Strache (1979) extended this research and tested player's perceptions of leadership qualities. The researchers utilized the Path-Goal Theory, an extension of the contingency model, in order to interpret the findings. The purpose of the study was to examine the relationship between player perceptions of coaching behaviors and win – loss records, player status, and educational level. Based on the findings Vos Strache drew several conclusions which support the Path-Goal Theory. The findings illustrated that the coach should support their players with different kinds of awards, make expectations lucid, decrease obstacles to the goal, and have awareness of the differences in perceptions between starters and non-starters. The leadership behaviors that the coaches engaged in to accomplish this goal were tolerance of uncertainty (e.g., low anxiety in uncertain situations), persuasiveness (e.g., uses strong convictions to get subordinates to commit to common goal), and tolerance of freedom (e.g., a democratic leadership style). The findings supported the use of the Path-Goal Theory in sport (Vos Strache, 1979).

Terry and Howe (1984) also implemented the Path-Goal Theory in their study which investigated the coaching preferences of athletes. The study consisted of 180 varsity level athletes, 80 males and 80 females, from 16 different teams. The investigators focused their comparison on gender and its effect on an athlete's preferred leader behavior. They found that independent sport athletes preferred more democratic behavior and less autocratic behavior than individuals in team sports (Terry & Howe,

1984). The study supported that the situation does in fact have an impact on the most effective coaching behaviors of the coach, which partially supported the Path-Goal Theory (Terry & Howe, 1984).

Another leadership perspective which has received a substantial amount of support outside of sport is the transactional and transformational perspective.

Charbonneau, Barling, and Kelloway (2001) recognized that the transformational leadership style may be effective if utilized in the sport realm. The goal of their study was to see how transformational leadership impacts sport performance through the mediating effects of intrinsic motivation. The researchers surveyed 168 athletes. The athletes rated their coach as being high or low in transformational leadership using the Multifactor Leadership Questionnaire –Form (Bass & Avolio, 1995), as well as their own motivation to play sport (intrinsic / extrinsic) using the Sport Motivation Scale (Pelleiter & Vallerand, 1996). The results of the study produced evidence that transformational leadership styles are correlated with higher levels of intrinsic motivation. Conclusions of the study were that intrinsic motivation was a positive moderator between this style of leadership and sport performance.

Recently, Rowold (2006) employed the transformational perspective while studying 200 martial arts students and their coaches, in order to investigate which coaching styles were significantly related to effective leadership. It was found that effective leadership was most strongly related to behaviors that align with transformational leadership. Furthermore, it was found that transactional leadership amplified these effects. These findings gave support to the fact that coaches who adopt

leadership styles from the transactional/transformational approach engage in effective leadership behaviors.

Sport psychology researchers have made valiant attempts at integrating classic leadership theories into the sport realm. These efforts have highlighted the importance of understanding how leaders emerge and behave in sport. This line of research has also created an awareness that sport leaders, and their behaviors, have an impact on their followers. In order to further explore these different facets in a more appropriate fashion, leadership theories specific to sport have been developed.

Contemporary Theories of Sport Leadership

Investigating leadership in sport through frameworks adopted from other disciplines led to the formation of diverse research trajectories (Smoll & Smith, 1989). Consequently, sport researchers identified the need to create comprehensive models incorporating the results from previous studies. By developing such models, sport researchers could study leadership in a more cohesive fashion leading to more cogent conclusions. Two such models were The Multidimensional Model of Leadership (Chelladurai, 1984) and the Mediational Model of Leadership (Smoll & Smith, 1989).

The Multidimensional Model of Leadership has been recognized as a feasible model in understanding the coach-athlete relationship (Price & Weiss, 2000). The model states that antecedents systematically affect leader behaviors, which in turn cause certain consequences to occur. The antecedents consisted of the situational, member, and coach characteristics. Situational characteristics (e.g., nature of the sport, level of competition, practice vs. competition) influenced the appropriateness of the coaches required behavior. Member characteristics (e.g. age, gender, psychological characteristics) influenced the

preferred coaching behavior. Coach characteristics (e.g., age, gender, experience, psychological characteristics) had an influence on the coaches' actual behaviors. The coaching behaviors were expressed in terms of training and instruction, decision making style (autocratic/democratic), social support, and positive feedback. The amount of congruence between the three recognized coaching behaviors influenced the athletes' level of performance and satisfaction (Chelladurai, 1993).

The Leadership in Sport Scale (Chelladurai & Saleh, 1980) was utilized to assess various factors associated with leadership behavior in sport. The pen and paper questionnaire specifically measured the behaviors of the leader, although research teams were encouraged to investigate how these behaviors affected the athlete and the environment, as well as how the environment and athlete mediated these behaviors. The LSS was composed of 40 items measuring five different coaching behaviors. The five behaviors included training and instruction, democratic behavior, autocratic behavior, social support, and positive feedback.

Coaches who engaged in training and instruction behaviors emphasized hard work, instruction of skills, techniques and tactics of the sport, and clarifying relationships of the members. Coaches who expressed democratic behaviors allowed athletes to participate in decision making pertaining to group goals, practice methods, and game tactics (Chelladurai & Saleh, 1980). Conversely, autocratic behaviors were characterized by coaches who expressed personal authority and decision making (Chelladurai & Saleh, 1980). Social supportive behaviors were characterized by the concern for athletes welfare, positive group environment, and warm interpersonal relationships (Chelladurai & Saleh, 1980). Finally, positive feedback behaviors were seen when coaches reinforced

their athletes through recognition and rewarded good performance (Chelladurai & Saleh, 1980). The LSS could be modified to measure perceived, preferred, and actual leadership behaviors (Chelladurai, 1993).

The Multidimensional Model of Leadership has been utilized in a broad range of research, studying the causes and consequences of leadership behavior in sport (Balaguer et al., 2002; Chelladurai & Carron, 1983; Riemer & Chelladurai, 1995). Through examining the effects of leadership we can see the links between the current leadership model and the ones proposed earlier, although there has not been an extensive amount of literature investigating this topic. Chelladurai (1993) proposed a connection between the Multidimensional Model of Leadership, the Situational Leadership Theory (Hersey & Blanchard, 1982), and The Path-goal Theory (House, 1971). The Multidimensional Model of Leadership identified a correlation between the team member's individual differences and the required leader behavior. This stance was congruent with the Situational Leadership Theory. This relationship between actual leadership behavior and member characteristics could also relate to the Path-goal Theory, which recognizes that subordinate characteristics are a situational variable, effecting leadership behavior (Chelladurai, 1993). The vast array of research which has studied the coach-athlete relationship utilizing this model has provided strong support for its research and practical use (Amorose & Hollembeak, 2005; Chelladurai & Saleh, 1980; Jowett & Chaundy, 2004).

Another model of leadership which has been widely accepted in sport research is the Mediation Model of Leadership (Smoll & Smith, 1989). The model was developed on the premise that prior leadership research could be synthesized and applied to the sport

realm. The model examined leadership behaviors, and the antecedents and consequences of these behaviors. The Mediational Model of Leadership was unique due to its focus on youth sport, detailed evaluation of leader behaviors, use of observational methods in describing leadership behavior, and the emphasis on the athlete's evaluation of the leader behaviors (Smoll & Smith, 1989).

The Mediational Model proposed that coach behaviors systematically effect player perception and recall, which in turn directly affect player evaluation reactions. These three different elements were affected by coach-individual difference variables, player individual difference variables, and situational factors. The coach-individual difference variables included coaching motives, behavioral intentions, instrumentalities, perceived coaching norms and role conceptions, inferred player motives, self monitoring, and sex. Player-individual difference variables were age, sex, perceived coaching norms, valence of coach behaviors, sport-specific achievement motives, competitive trait anxiety, general self-esteem, and athletic self-esteem. Situational factors which have an effect on coach behaviors and consequent player reactions were the nature of the sport, level of competition, practice versus game, previous coach success and failure, present game or practice outcomes, and intra-team attraction (Smoll & Smith, 1989).

The Coach Behavioral Assessment System (CBAS; Smoll & Smith, 1989) was developed based on the Mediational Model of Leadership. The measurement system emphasized the need to measure actual coaching behaviors as well as player perceptions and recall of the behaviors. The actual leadership behaviors were measured through direct observation of the coach, and the player perceptions and recall were measured by a paper and pencil questionnaire. The researchers identified the insignificance and danger

of utilizing self-report questionnaires in leadership research and adopted the behavioral approach of observational methods (Smoll & Smith, 1989). After years of direct observations of coaching behaviors in various youth sports, the researchers defined 12 behavioral dimensions to measure. These behaviors have been distinguished between reactive (reinforcement, non-reinforcement, encouragement, technical instruction, punishment, punitive technical instruction, ignoring mistakes, keeping, control) and spontaneous behaviors (general technical instruction, general encouragement organization, general communication) (Smith, Smoll, & Hunt, 1977).

The Multidimensional Model of Leadership and the Mediational Model of Leadership possessed key differences and similarities. The most significant difference between the two models was the means of assessment. Another difference was the specific pathways of effect that the behavioral categories of leadership have on the individual coach and athlete variables. A similarity between the models was the behavioral categories of leadership (Chelladurai, 1993). Specifically, the terminology and quantity of the leadership behavior categories employed to describe the behaviors contrast; however, they do conceptually overlap (Amorose & Horn, 2000). Recently, Cumming, Smith, and Smoll (2006) identified the need to statistically analyze the relationship between the behavioral categories of each model. The researchers sampled 645 high school athletes and asked them to fill out the LSS, as well as the CBAS-PBS, rating their coach's behavior. The researchers identified a convergence between the measures of perceived coaching behaviors. The different subscales of the LSS were significantly correlated to specific measures of leadership behavior in the CBAS-PBS (Cumming et al., 2006). These findings supported the original contention of Chelladurai

(1993), as well as provided support for the convergent validity of the two scales. The two models of leadership have been compared, although there has been little attempt in synthesizing them in order to create a more comprehensive leadership model in sport (Cumming et al., 2006).

Since the emergence of sport specific leadership models, there has been a surfeit amount of research investigating coaching behaviors in terms of antecedents and consequences of those behaviors. Similar to leadership theory developed in other disciplines, leadership research in sport has directed its focus on the coach and the subsequent effects his/her behaviors have on the athlete. Recent critiques of the models (Magyar, 2002; Moran & Weiss, 2006) revealed the absence of synthesizing concepts from other theories outside of leadership. The incorporation of theoretical frameworks would produce additional significance to the understanding of the antecedents and consequences caused by leadership behavior (Hogg, 2001; Magyar, 2002; Moran & Weiss, 2006). One area of sport psychology which is rich in theory and has been applied to leadership is motivation.

Leadership and Motivation Theory in Sport

Research examining the relationship between motivation and leadership has been approached from two perspectives. The first perspective adopts the Self-Determination Theory as a framework to analyze leadership (Deci & Ryan, 1985). Specifically, this approach is concerned with how leadership behaviors have an effect on intrinsic and extrinsic motivation of the athlete. The second perspective has incorporated principles from the Achievement Goal Theory (Nicholls, 1984). This line of research has explored how coaching behaviors and leadership styles affect athletes' perceptions of ability goal

orientations and the motivational climate. The following section will define the two motivational theories that have been employed to study the relationship between motivation and leadership.

The Self-Determination Theory (SDT; Deci & Ryan, 1985). According to the SDT athletes participated in sport to fulfill three psychological needs: (a) autonomy, (b) competence, and (c) relatedness (Deci & Ryan, 1985). The need for autonomy referred to the perceived choice an individual has over their actions. Competence referred to an individual's perceptions that they interact and deal with their environment effectively. Finally, relatedness was defined as the drive to relate to and feel connected with significant others. According to the SDT individuals would be intrinsically motivated to participate in situations that fulfill these psychological needs (Vallerand & Losier, 1999). Once involved in a situation there were certain social factors that influenced the perceptions of these psychological needs (e.g., success/failure, competition/cooperation, coaching behaviors). Furthermore, the perceptions of competence, autonomy, and relatedness determined if individuals are intrinsically or extrinsically motivated (Deci & Ryan, 1985). Intrinsic motivation was defined as the desire to be competent and self-determining in accomplishing a goal. Conversely, extrinsic motivation was driven by external rewards and normative focused feedback (Deci & Ryan, 1985). Lastly, research testing this model has found that intrinsic motivation was related to positive psychological consequences (e.g., increased affect, persistence) while extrinsic motivation is related to more negative outcomes (e.g., sport withdrawal, performance anxiety) (Deci & Ryan, 1985; Vallerand & Losier, 1999).

The Cognitive Evaluation Theory (CET; Deci & Ryan, 1985) was a sub-theory of the SDT that explained motivation by analyzing how individuals appraise extrinsic rewards and how those rewards effect intrinsic motivation. The theory posited that there were two aspects of extrinsic rewards that determine an individual's intrinsic motivation. These two factors were how controlling and informative the reward was. If a person was motivated solely for the reward, then it was defined as controlling. The more controlling the reward was the less intrinsically motivated and self-determined the individual would be towards the associated task. The informational factor referred to the quantity and quality of the feedback associated with the reward. Rewards that were high in positive and constructive feedback would increase intrinsic motivation, while negative or low amounts of information would decrease intrinsic motivation (Vallerand & Losier, 1999). This theory has been influential in research interested in the associations between coaching behaviors and intrinsic motivation (Amorose & Horn, 2000, 2001).

Pelleiter and Vallerand (1996) utilized the principles of the CET in organizational research in order to confirm the hypothesis that more supportive and less controlling supervisors increased the intrinsic motivation of their subordinates. The study utilized a teaching paradigm to confirm the predictions. Supervisors were informed of their subordinate's levels of intrinsic or extrinsic orientation. The supervisors were then asked to lead their subordinates through a task. Following the task the subordinates rated the behaviors of their supervisor as either controlling or supportive. Supervisors who believed that their subordinates were intrinsically motivated tended to be rated supportive. Also, the subordinates with a supportive leader tended to be intrinsically motivated during the task. The findings supported the tenets of the CET that intrinsic

motivation was a function of supportive behavior from leaders (Deci, Nezlek, & Sheinman, 1981; Deci & Ryan, 1985).

Black and Weiss (1992) examined the relationship between coaching behaviors and perceived ability and motivation among a group of 312 competitive swimmers. The swimmers ranged from 10-18 years of age, and then were broken down into three different age categories (e.g., 10-11, $n = 121$; 12-14, $n = 108$; 15-18, $n = 83$). A modified version of the CBAS was used to measure coaching behaviors, and a modified version of Harter's Self-Perception Profile for Children was used to tap levels of self-competence. The athletes' intrinsic motivation was quantified by the Motivational Orientation in Sport Scale (Weiss, Bredemeir, & Shewchuk, 1985) and the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989). Both male and female athletes who perceived their coach as providing them with praise and information following desirable performances reported higher levels of perceived success, perceived competence, challenge motivation, enjoyment, and effort. In terms of age-group differences, the 10-11 year olds were not impacted by coaching behaviors as much as the older athletes. An explanation provided by the researchers was based on Nicholls' (1984) findings that athletes do not have the ability to differentiate between effort, ability, and task difficulty until about the age of 12. A significant difference between gender and perceptions of coaching behavior and self-perception was found. Specifically, females scored lower than males on perceptions of praise and competence. Their findings supported the CET in that positive feedback and information increased perceptions of competence, which consequently increased the level of intrinsic motivation.

Amorose and Horn (2000) investigated athletes' perceptions of coaching behavior and how general coaching styles effect intrinsic motivation of the athlete. The researchers administered a series of questionnaires to 386 Division I collegiate athletes. A multivariate analysis determined that intrinsically motivated athletes perceived their coaches exhibiting more training and instruction, positive and informational feedback, and democratic behavior. The analysis of gender differences also revealed significant main effects. It was found that female athletes scored lower on perceived ability. Also, democratic coaching behaviors were higher indicators of intrinsic motivation for females than males. Conversely, coaching behaviors characterized by high frequencies of punishment were negatively associated with intrinsic motivation among females, while this relationship was not significant for males.

Amorose and Horn (2001) published another set of findings a year later, which took the form of a season long examination of NCAA Division I collegiate swimmers ($N = 72$). The study tested whether the athletes' intrinsic motivation changed from pre-season to post-season based on their coaches' behavior. The researchers found that an increase in intrinsic motivation was associated with coaches using a high level of training and instruction and low levels of autocratic behavior and social support.

After reviewing the literature that focuses on coaching behavior and its effect on leadership, it was confirmed that there has been a shortage of studies testing the relationship between coaching behavior and intrinsic motivation (Gill, 2000). Now, there has been an emergence of this line of research, and researchers have begun to focus on how specific (e.g.: Transactional and Charismatic) theories of leadership style and behavior effect motivation. This type of research was warranted, although there

remained several limitations. The past work on coach-athlete relationships and intrinsic motivation strictly directed its attention to coaching behavior. Future research must look at the bi-directional relationship of the coach and athlete and how these interactions affect levels of intrinsic motivation. Also, it should be noted that there are various leaders found on a team, and the behaviors of peer leaders would also have an effect on the intrinsic motivation of their teammates.

Achievement Goal Theory. The AGT (Nicholls, 1984) was originally developed and utilized to predict and analyze how individuals approached achievement-related tasks as a function of perceptions of their own ability. The AGT predicted and analyzed behaviors across the lifespan, although the initial roots of the theoretical postulates were focused on how children matured based on their definition and understanding of perceived ability and competence. Nicholls (1984) proposed four developmental levels that described how children conceptualized the relationship between luck, effort, and task difficulty with ability. Children who were in level one were unable to differentiate between ability, luck, and effort. In other words, children believed that effort was the sole indicator of success, whether it was a luck or skill based activity. Also, children in this stage determined how difficult a task was based on personal expectations of success. Children who matured to level two began to differentiate between luck, skill, and effort. Specifically, children understood that skill tasks were impacted more by effort than luck, but could not explain why. In level two children understood that task difficulty was independent of their own beliefs for success, but could not determine if success was due to low ability or high task difficulty. In level three children still believed that performance on a luck task would improve with effort, although skill tasks were impacted

at a greater degree by how hard they tried. They also understood that effort was not the sole indicator of outcomes, and that ability played a role. Further, children at level three also measured the difficulty of a task through social comparison. Finally, children who had developed into level four were fully differentiated in their conception of ability and its relationship with effort and task difficulty (Nicholls, 1984; Weiss, 2004).

Fry (2000) tested Nicholl's model to see how children progress through these proposed levels of ability conception. The researcher sampled 144 children, who were evenly distributed by age and gender, and were between the ages of eight and fourteen. For each age group the participants were presented with two similar games, although one was determined by luck and the other skill. Fry then read a story to each child about how another child completed the game either successfully or unsuccessfully. Following the story the participants were asked several probing questions (based on conceptions of ability) concerning the participant's belief of why the child in the story had succeeded or failed. Then, the children were asked to play the games themselves, being given the choice between the luck and skill tasks. The researchers found that the majority of five and six year olds were at the first level of conception. At age seven there was a split between children at level one and two. At age eight, 70 percent of the children were at level two. Between the ages of nine, ten, and eleven there was an even distribution between levels two, three, and four. Finally, children eleven and twelve had matured to either level three or four. These findings supported Nicholls model, and the important developmental trends in defining success. The majority of research within the Achievement Goal literature employed samples who were fully differentiated in their conceptions of ability.

Research that was not concerned with the developmental trends in regard to conceptions of ability in youth that employed the Achievement Goal Theory still placed great importance on an individual's motivation to be competent in a performance situation (Gill & Williams, 1995). For example, an athlete would believe they were successful if they were capable of demonstrating that they were competent at a task (Nicholls, 1984). Conversely, athletes would feel unsuccessful if they failed in their quest to demonstrate competence. The unique aspect of the Achievement Goal Theory was how individuals defined competence and appraised success. The AGT proposed that dispositional goal orientations and situational goal states influenced how athletes deemed themselves successful (Horn, 1992).

Dispositional goal orientations of an athlete referred to the extent to which the individual focused on task and/or ego goals. Individuals who were task-involved found success when they displayed high effort, improvement, learning, and mastery of a task. Individuals who were ego-involved were more focused on normative referenced goals, such as comparison to others (Newton & Duda, 1998). There was an orthogonal relationship between task and ego orientations and athletes could vary in their levels of each (Harwood, 2000). Situational factors also affected achievement goal orientations. One situational factor was the motivational climate, which was created and directly affected by significant others, specifically the coach. The motivational climate referred to the reward structure of the environment in which an athlete participated. A task-oriented climate emphasized personal improvement and effort. An ego-oriented climate would focus on competition, winning, and social comparison. Research has found that these differences in situational characteristics and dispositional goal orientations

influenced perceived, preferred, and actual leadership behavior (Newton & Duda, 1999a). Equally, the behaviors of coaches had a great deal of influence on the motivational climate.

Pensgaard and Roberts (2002) studied how athletes experienced the motivational climate, and the coaches' role in that experience through a qualitative study. The researchers interviewed seven elite individual sport athletes, who participated in the same sport, and had a long history of competing at a high level. The interview questions were composed of items derived from the Perceptions of Success Questionnaire (Roberts, Treasure, & Balague, 1998) and the Perception of Motivational Climate Questionnaire (Seifriz et al., 1992). Analysis of the interviews provided concrete results which supported the hypothesis that the coach plays an integral role in creating the motivational climate, and subsequently the athletes' achievement motivation. For example, one athlete claimed that "The coach is a very important creator of the motivational climate..." Other important findings were that the athlete recognized that the coach needs to adopt different styles of coaching in different situations, and that different types of people required different types of coaching styles. One athlete responded, "There are perhaps some (athletes) who have a greater need for the coach to be important to them than do others." A major theme of the athletes' responses were the importance of keeping the sport experience fun at a young age, and to have coaches who emphasized high amounts of task-oriented behaviors (Pensgaard & Roberts, 2002).

It has been found that interventions which create a more task- and/or mastery-oriented climate tend to increase the satisfaction and performance of athletes. Valentini and Rudisill (2004) examined how changes in the mastery climate had an effect on the

performance of children with and without disabilities. The researchers studied 104 participants that were divided into four different groups (intervention with disabilities, intervention without disabilities, comparison with disabilities, comparison without disabilities). It was found that regardless of whether the participant had disabilities or not, there was a significant increase in performance of group members who received the intervention of a mastery climate (Valentini & Rudisill, 2004).

Smith, Fry, Ethington, and Li (2005) tested the relationship between athletes' perceptions of their coaches' behavior with their perceptions of the motivational climate. The researchers selected 143 female high school basketball players and administered the Perceived Motivational Climate in Sport Questionnaire-2 (Newton & Duda, 1999) and the Coaching Feedback Questionnaire (Amorose & Horn, 2000). The results of the study provided support for the Achievement Goal Theory. It was found that athletes' perceptions of their coaches' behaviors had a significant effect on the athletes' perceptions of the motivational climate. Specifically, when athletes perceived their coaches to provide instructional, positive, and encouraging feedback, they perceived the motivational climate as more task-oriented. Conversely, punishment was associated with more ego-involving motivational climate outcomes (Smith et al., 2005).

The most extensive research investigating leadership behaviors, achievement goal orientations, and perceptions of the motivational climate was conducted by Balaguer and colleagues (Balaguer, Duda, & Crespo, 1999; Balaguer et al., 2002; Duda & Balaguer, 1999). They conducted two studies focusing on goal perspectives and leadership (Duda, 2001). The studies utilized concepts from the Mediational Model of Leadership (Smith et al., 1977), the Multidimensional Model of Leadership (Chelladurai & Saleh, 1980) and

the Achievement Goal Theory (Nicholls, 1984). One purpose of the study was to examine goal orientations and perceptions of the motivational climate in relation to athletes' perceptions of their coach's behavior and preferences for that behavior. The second purpose was to find the relationship between the perceived situational goal structure of the climate and perceptions of improvement and satisfaction of the athlete (Duda, 2001). The participants in the study were intermediate-advanced Spanish tennis players and elite female handball players. When the athletes perceived their motivational climate to be task-oriented, they viewed the coach as providing high levels of training and instruction and social support. These athletes also preferred that their coach adopt these leadership behaviors. Athletes in a task-involving climate also perceived improvement in tactical, technical, as well as psychological and competitive facets of their sport. Conversely, athletes in an ego-oriented climate perceived that their coach was not concerned with their welfare, and adopted a leadership style based on training and instruction. The athletes who perceived the climate to be ego-involving but were task-oriented preferred a more rigorous training and instruction behavior from their coach. Less satisfaction concerning improvement was found in athletes who perceived the environment to be more ego-involved (Duda, 2001).

Drawing from this empirical research conducted on goal perspectives, leadership style, subjective performance, satisfaction, and coach ratings in sport, Duda and Balaguer (1999) created an integrated model of antecedents / consequences of coach leadership. The model attempted to merge frameworks which explain leadership, including the Multidimensional Model of Leadership and Achievement Goal Theory. A central feature of the model was that it recognized that actual leadership behaviors, perceptions of these

behaviors, and preferences concerning leadership behavior, could be analyzed by taking into consideration achievement goal orientations and perceptions of the motivational climate (e.g., task/ego) (Duda, 2001).

A review of the AGT literature provided an elevated amount of support for the predictive nature of the theory's tenets. However, it must be noted there are several areas of the AGT that are worth a critique. First, the scope or range of the AGT was extremely broad. For example, the predictive nature of the theory expanded across the lifespan into different domains of interest and cultures. It has been contested that a good theory should have limitations in what it can and cannot predict. Second, the direction of causation was often confused within the AGT literature. For example, does the motivational climate induce certain behaviors of the individual involved, or do their behaviors shape the motivational climate? Lastly, AGT research concerned with how individuals were motivated toward achievement-related tasks have provided a great deal of insight into motivated behavior in sport. However, AGT researchers have not provided a sufficient amount of attention to social motivation (e.g., the desire for social connections)(Hodge, Allen, & Smellie, 2008).

Recently, Hodge and colleagues (2008) examined the relationship between achievement goals, social goals, and indices of motivation (e.g., intrinsic vs. extrinsic, perceptions of ability, perceptions of belonging, sport commitment, sport enjoyment). The researchers sampled 373 Master level athletes between the ages of 29 and 77 years. Through a cluster design the researchers were able to classify individuals based on their achievement goal orientations (e.g. task vs. ego) and social motives (e.g., affiliation, recognition, status). The findings of the study revealed that athletes who were task-

oriented and motivated toward social status and affiliation were more likely to be intrinsically motivated and have increased enjoyment, sport commitment, and perceptions of athletic ability (Hodge et al., 2008). The conclusions made it clear that social relationships in sport were an important aspect to consider when studying indices of sport motivation.

Sport psychology researchers (Duda & Balaguer, 1999; Ferrer-Caja & Weiss, 2000) have made valiant efforts at integrating various conceptual frameworks which explain both leadership and motivation. The insight into the leadership-motivation relationship has triggered researchers to take more novel approaches. As sport leadership theory and research became more thorough and complex, it was apparent that leadership was primarily a function of the coach-athlete relationship, instead of simply coaching behaviors.

Interpersonal Relationships in Sport

The essence of leadership research in sport psychology is to understand the coach-athlete relationship. Leadership research has gained attention because of the purported implications the coach-athlete relationship has on athlete satisfaction, stress, confidence, self-esteem, performance, motivation, and adherence. This relationship has traditionally been analyzed through behavioral and interactional approaches that place the coach as the central feature (Chelladurai & Saleh, 1980; Jowett, 2006; Smoll & Smith, 1989). Not until recently has it been recognized that there is a need to study the coach-athlete relationship from an interpersonal perspective. Based on this premise, the coach-athlete dyad and the subsequent interpersonal relationship that is formed in this dyad have been

made explicit for research and applied purposes. The goal of the present section was to explore the literature that has adopted this relationship approach.

The VDL (Graen & Cashman, 1975) was one of the first leadership models utilized, primarily in the organizational realm. It recognized the transactional relationship between leaders and subordinates, and acknowledged that leaders treat each subordinate in a unique way based on subordinate characteristics. The research driven by the VDL instigated a trend in leadership research that moved away from defining a leader to the study of how a leader acts and interacts with subordinates (Graen & Cashman, 1975). A key distinction made by the VDL was to explain the effects of low and high quality leader-member exchange (LMX). When the leader-member interactions were strictly professional and defined by organizational protocol, an impersonal, low quality exchange would be formed. This exchange would result in poor communication and would subsequently cause incongruence between leader and subordinate. Conversely, high quality relationships were characterized by mutual exchange of relationship resources (e.g., communication, commitment, and loyalty). This type of relationship would lead to a congruent understanding of goals (Dragoni, 2005). Another major focus of the VDL was on the relationship development between the subordinate and the leader.

Dragoni (2005), an organizational psychology researcher, recognized the implications of the leader-member transaction. The purpose of the study was to investigate the individual state goal orientations of business team members based on indices of leadership. Dragoni (2005) found that the quality of the LMX would directly affect the achievement motivation orientation of the subordinate. Specifically, if the LMX was high quality, the member would be more likely to adopt the achievement goal

orientation of their leader and would align more closely with the goals and values of the business team (Dragoni, 2005).

The VDL and the principles of the LMX were first applied in the sport setting by Case (1998). The purpose of this study was to test the VDL, specifically the LMX, between coaches and athletes (starters vs. nonstarters). The participants consisted of 178 adolescent female basketball players at a summer camp. The participants completed the LMX scale on the last day of camp. The findings supported the VDL and demonstrated a distinction between the relationship formation of in-groups and out-groups. Starters scored significantly higher on the LMX scale than nonstarters. The researcher concluded that the in-group (starters) had higher and more beneficial levels of exchanges, resulting in positive psychological outcomes that enhanced sport performance, satisfaction, and adherence (Case, 1998). Furthermore the researchers proposed that if coaches were aware of how they interacted with in- and out-groups, they would be more likely to tailor their behaviors toward the out-group, producing enhanced performance within their starters and non-starters.

Traditional sport leadership models focused on the coach-athlete dyad and employed many theoretical underpinnings of the VDL. Both the Multidimensional Model of Leadership and the Mediation Model of Leadership recognized that the coach-athlete relationship was of great importance. Butt (1987) noted that negative coach-athlete relationships caused poor performance and even drop out, while Barnett, Smoll, and Smith (1992) proved that positive coach-athlete relationships lowered drop out rates in youth sport. Despite these advances, the models had received the standard leadership

theory criticism: there was a lack of attention given to the bi-directional relationship between the athlete and the coach.

Wylleman (2000) presented various explanations for why leadership research has been confined to coaching behavior, rather than expanding to more interpersonal methods. First, he suggested that issues that are methodological in nature could be a limiting factor, such as ethical protocol (e.g., confidentiality and team selection) and available instruments. Second, from an applied perspective, Wylleman challenged sport psychologists who viewed themselves as strictly mental skills trainers, suggesting that this standpoint may restrict their perceptiveness toward relationship issues. Third, he argued that undue attention was given to the coach because they were the more dominant member of the dyad. Recently, researchers have made efforts to overcome these issues, and provided strong methodological perspectives to approach coach-athlete relationships (Jowett, 2003, 2006; Jowett & Ntoumanis, 2003; Poczwardowski et al., 2006).

Jowett and Cockerill (2003) developed an interpersonal construct termed the 3 C's Model in order to investigate interpersonal relationships in sport. The model was based on the coach-athlete relationship that was defined as a mutual and causal interdependence between coaches' and athletes' feelings, thoughts, and behaviors (Jowett, 2003). This definition was adopted from Kelley et al.'s (1983) conceptualization of two-person relationships, which stated that individuals within a relationship have interrelated emotions, cognitions, and behaviors. These feelings, thoughts, and behaviors were originally thought about through the constructs of closeness, complementarity, and co-orientation. Closeness referred to the emotional aspect of the coach-athlete relationship. This component reflected the emotional depth of the relationship.

Closeness was measured through the expression of trust, respect, like, and appreciation. Co-orientation depicted the relationship perceptions held by the athlete and coach. Lastly, complementarity defined the behaviors of the relationship. This aspect was measured through the interaction between the athlete and coach and focused on behaviors such as responsiveness, friendliness, ease, and willingness (Jowett, 2005).

The first of a series of qualitative studies to explore the constructs of the 3 C's model was employed by Jowett and Meek (2000). The researchers interviewed four married coach-athlete dyads who participated at elite levels of track and field. The interviews were conducted with each participant individually and then content analyzed. The analysis revealed that the emotions, cognitions, and behaviors of the relationship could be effectively categorized into the three constructs proposed by the 3 C's model (e.g., closeness, co-orientation, complementarity). Further, it was noted that the coach-athlete relationship among the married couples was characterized by love, liking, caring, trust, and faith. Also, verbal and non-verbal communication was essential to a shared understanding of common goals. Lastly, the member of the married couple who was the coach was able to adopt a more dominant stance during training, while both the coach and athlete were friendly and responsive, resulting in high levels of complementarity (Jowett & Meek, 2000).

Following this initial study Jowett (2003) investigated a single coach-athlete dyad through the implementation of the 3 C's. Prior to the beginning of the case study Jowett (2003) took several methodological obstacles (e.g., insufficient instrumentation, lack of willing participants) into consideration and used them to her advantage. She used qualitative methods and took extensive precautions to increase the reliability and validity

of the study as well as reduce experimenter bias. For example, the researcher selected a coach-athlete dyad willing to participate in the study that allowed all data collected to be used, a triangulation qualitative design was used, and participants were asked to read transcriptions for accuracy. The athlete studied was a female competing at the national and international level for 13 years, was participating in an individual sport, had a report of negative relationship issues, and had previously won a silver medal in the Olympic Games. At the time of the study the coach and athlete had been working together for a four year period, although they were experiencing relationship turmoil. Based on extensive interviewing and analyses, Jowett (2003) made several conclusions about negative outcomes of poor quality coach-athlete relationships.

A lack of closeness (belief, respect, trust, commitment) was correlated with feeling unattached, distressed, isolated, and angry. The athlete expressed the importance of closeness by stating “it helps essentially the coach to discover the soul and heart of the athlete.” Interestingly both a positive and negative component of closeness was observed. Both the coach and athlete reflected on how it was important to set limits to their level of closeness, for example, the coach reported “to a degree close”, similarly the athlete responded “close to a point.”

Co-orientation (congruence and communication concerning wants, needs, and goals) was found to be important to both the athlete and the coach. The athlete stated “my coach is my friend and I discuss with him anything and so can he. I believe that athletes have to talk with their coaches about the training program in order to come to joint decisions.” When there was a lack of co-orientation within the dyad, negative relational outcomes, such as disagreements and disconnection, occurred.

Finally, in terms of complementarity, both the coach and athlete had a need to act out behaviors recognized as negative. The athlete stated that “he was paying more attention to his other athletes...he ruined the model coach I had. He stopped providing me with certainty and energy...” The athlete and coach were not able to communicate around these negative behaviors which caused a breakdown in the relationship. An underlying conclusion to the study was that communication, specifically disclosure, was a major indicator of relationship quality (Jowett, 2003).

Jowett and Cockerill (2003) interviewed a sample of notable athletes consisting of 12 Olympic medalists. The goal of the study was to gain a greater understanding of how the constructs of closeness, co-orientation, and complementarity could be used to understand the coach-athlete relationship. The sample represented six different sports and eight different countries. The athletes were presented with five open-ended questions concerning their relationship with a chosen coach. The responses to the questions were analyzed and broken down into a hierarchical organization. All the raw data points, in the form of quotes, were categorized into either of the 3 C's.

Closeness accounted for 66 percent of the raw data units. Second order themes of closeness that emerged were personal feeling (intimacy, trust, liking) and generic feelings (respect, belief, commitment). Thirty two point three percent of these responses were positively framed while five percent were negatively framed. The construct of co-orientation accounted for only 17.4 percent of the raw data units, and the majority of these were positively framed. Second order themes that surfaced were shared knowledge and shared understanding. The third construct, complementarity, accounted for 31.8 percent of the raw data units. The second order themes that were identified were only

positive behaviors (co-operative behaviors, helping transactions). In general the majority of the raw data units were positive, which developed the necessity to study how these constructs were interpreted within a negative relationship. The authors concluded that coach-athlete relationships were athlete-centered and characterized by respect, trust, care, concern, support, open communication, shared knowledge, and understanding.

Phillippe and Seiler (2006) utilized the 3 C's Model to investigate the significance of the coach-athlete relationship in elite swimmers. Five swimmers from the Swiss National Team were selected for the study. A qualitative interview design was adopted to explore effective coach-athlete relationships. The interview guide consisted of 57 open-ended questions. Once all interviews were transcribed, a qualitative content analysis was performed. In general, 90 percent of raw data units were prescribed to the three domains of closeness, co-orientation, and complementarity. The remaining 10 percent of the data could have been placed in either of the constructs, therefore eliminated from further analyses.

Results of the study indicated that the athletes believed a positive coach-athlete relationship was essential to high levels of performance. The athletes recognized the natural "ups and downs" of the relationship, although postulated that if the relationship was overall negative, it was not worth working together. Athletes reported that closeness was characterized by "essential coach-athlete requirements" (respect, esteem, admiration, appreciation, professional relationship) and "social relationships" (friendship, love). For example one athlete stated, "A sound relationship is a relationship based on respect, esteem, understanding each other, and it is the type of relationship that allows the athlete to develop...all the same it is very important to get along well with your coach..."

Communication and goal objectives were the defining factors of co-orientation. An athlete exclaims, “we often discuss things together, it seems to me that this type of dialogue is absolutely essential. A relationship without interchange is not a relationship, let us say it is like when you are with your own girlfriend or family it is important to exchange ideas...” Finally, acceptance and respect of roles are how the athlete conceptualized complementarity. For these five swimmers, the 3 C’s were important to their athletic development and performance success.

Based on the information gained from the strategic qualitative studies presented, Jowett and Ntoumanis (2003) developed the Coach-Athlete Relationship Questionnaire (CART-Q). The questionnaire was composed of 11 items, broken down into the three constructs of the 3 C’s Model. This questionnaire has received a small amount of use within coach-athlete relationship research, however, one study investigating the relationship between leadership behavior, perceptions of the coach-athlete relationship, and team cohesion yielded interesting results. Jowett and Chaundy (2004) distributed the CART-Q, the Leadership Scale For Sports (Chelladurai & Saleh, 1980), and the Group Environment Questionnaire (Carron, Widmeyer, & Brawley, 1985) to 111 British collegiate student-athletes. A hierarchical regression analysis revealed that together, coaching behaviors and the athletes’ direct perspective of the coach-athlete relationship accounted for 34 percent of the variance in group cohesion. Further, 8 percent of the total variance in group cohesion was accounted for by the athletes’ direct perspective of the coach-athlete relationship. This finding revealed that group dynamics among team sport athletes was not just a function of coaching behaviors, but is also uniquely influenced by how the athlete perceived the coach-athlete relationship.

In addition to the CART-Q, Jowett and Ntoumanis (2003) developed a version called the Greek Coach-Athlete Relationship Questionnaire (GrCART-Q). The researchers tested the updated instrument in two studies employing a total of 582 participants. The goal of the two study design was to develop a sound interpersonal-relationship measure with cultural consideration. After a battery of psychometric tests, the researchers found good content and construct validity (e.g., $\chi^2^{(139)} = 89.7$, $p < 0.001$, CFI = .91), as well as strong internal consistency (e.g., closeness, $\alpha = .90$; commitment, $\alpha = .87$; complementarity, $\alpha = .92$) for the final version of the GrCART-Q. A general discussion of the final results indicated that “the interpersonal constructs used to conceptualize the coach-athlete relationship were fundamental and robust, thus, they are not affected by culture.” The researchers did note, however, that coaches and athletes within Greek cultures interpreted the meaning of the closeness, commitment, and complementarity somewhat differently. Therefore, the researchers concluded that the GrCART-Q possessed both cultural generality and cultural specificity in the measurement of the coach-athlete relationship (Jowett & Ntoumanis, 2003).

The goal of Jowett’s (2006) most recent work was to statistically analyze an updated version of the 3C’s Model and the GrCART-Q. This model is more appropriately named the “3 + 1 C’s” Model, due to the addition of a third construct. A series of structural analyses showed that the construct of commitment should replace co-orientation as the third “C”. Commitment referred to the aspirations and plans of the coach and the athlete to preserve their relationship over time. Co-orientation was not eliminated but is now situated in a different statistical layer of the relationship. The incorporation of co-orientation as a separate layer to the modified 3C’s Model (closeness,

commitment, complementarity) allowed researchers to approach their analyses with a bi-directional perspective. Co-orientation was then used to study the meta-perspective of the coach-athlete relationship, which refers to the capacity of the athlete or coach to accurately infer the other member's perceptions of the relationship. The construct of co-orientation is further broken down into actual similarity, assumed similarity, and empathetic understanding (Jowett, 2005). When co-orientation was not actively included in the analysis, the direct-perspective was being measured. The direct-perspective focused on the perceptions of one member and how they viewed the other member of the dyad incorporating positive levels of the 3 C's Model into their relationship.

The GrCART-Q has received the most use in the literature, is minimally different from the original CART-Q, and has received the most psychometric testing. Therefore, it was employed for use within the present study. Although, it has yet to be used within a wide range of populations, and has received demands for further psychometric testing to ensure its validity and reliability across gender, race, competitive level, and cultural contexts (Jowett & Ntourmanis, 2003; 2004). Lastly, Pocwardowski, Barott, and Jowett (2006) argued that the approach to leadership research must be diversified. One method they proposed was to build upon the psychometrics of quantitative instruments used to measure the coach –athlete relationship. Therefore, it was crucial for the GrCART-Q's psychometric properties to be tested within original populations, such as American collegiate student-athletes, to provide sufficient confidence in quantitative relationship research.

The first purpose of the present study was to address current methodological issues by replicating and extending past studies that had analyzed the psychometrics of

the GrCART-Q (Jowett & Clark-Carter, 2006). Construct validity was analyzed through confirmatory factor analyses. Criterion validity was tested by comparing the scores on the subscales (closeness, commitment, complementarity) with instruments that have been traditionally used in relationship research. The instrument selected to test closeness was the Global Commitment Scale adopted from the Investment Model Scale (Rusbult, Martz, & Agnew, 1998). The Relationship Closeness Inventory (Berscheid, Snyder, & Omoto, 1989) was employed for the construct of closeness. The Sport Interpersonal Relationship Questionnaire- Athlete-Coach Version (Wylleman, 1995) was compared to the construct of complementarity.

The second purpose of the current study was to test unique outcome variables of the coach-athlete relationship. The outcome variable in this study was the athletes' perceptions of the motivational climate. There was an adequate amount of research supporting the relationship between motivation and coach-athlete relationships. Pensgaard and Roberts (2002) examined how athletes experienced the motivational climate as a function of their coach. Their findings revealed that the coach was the main "facilitator" of the motivational climate. Furthermore, achievement goal literature suggested that the coach has the most power in influencing and creating the motivational climate (Ames, 1992a). By assessing athlete perceptions of the motivational climate based on relationship quality, this study further diversified relationship research and added to the predictive validity of the GrCART-Q.

Chapter 3

Method

The present study employed a two phase approach. Phase I tested the psychometric properties of the GrCART-Q with a population characterized by American college-aged athletes. The second phase explored how perceptions of the coach-athlete relationship effect athletes' perceptions of the motivational climate.

Phase I

Participants

The total sample for phase one was 240 Kinesiology undergraduate students who had participated in a coached sport, although 8 of the participants were over the age of 25, or had not participated in a coached sport, and therefore, were excluded from the study. The final analysis consisted of 232 students. The average age of the sample was 20.66 years (SD = 1.10). Male athletes accounted for 45.7 percent (n = 106) of the students, while 54.3 percent (n = 126) were female. Eighty-three point two percent (n = 193) of the participants were Caucasian, 6.9 percent (n = 16) were African-American, 5.6 percent (n = 13) were Asian, 2.2 percent (n = 5) were Hispanic, 0.4 percent (n = 1) identified as Native-American, and 1.7 percent (n = 4) were members of another racial group. When participants were asked how long ago they had played for their coach, on average they responded 3.47 years, (SD = 1.9 years). The mean number of years the athletes played for their coach was 3.56 (SD = 2.35). Within this sample 75.9 percent (n = 176) of the coaches were male while 24.1 percent (n = 56) were female. Lastly, only 17 participants were currently participating in a coached sport.

Measures

Demographic Questionnaire (See Appendix A). The demographic questionnaire was administered to find the demographic background of each participant. Also, the questionnaire provided a comprehensive evaluation of their sport background, specifically their interaction with a particular coach.

Greek Coach Athlete Relationship Questionnaire (Jowett & Ntoumanis, 2003). The direct-perspective athlete version of the GrCART-Q (See Appendix B) was utilized to test athletes' perceptions of the coach-athlete relationship. The questionnaire consisted of 12 items assessing the constructs of Closeness (4 items), Commitment (4 items), and Complementarity (4 items). The questionnaire items were measured on a 7 point Likert scale (1 = strongly agree; 7 = strongly disagree). This version of the questionnaire has received psychometric testing within a Greek culture, with positive indications of psychometric validity (e.g., chi-square (χ^2 ⁽¹³⁹⁾ = 89.7, $p < 0.001$) and confirmatory factor analysis (CFI = .91) (Jowett & Clark-Carter, 2006).

Tests of criterion validity were utilized for the initial validation of the GrCART-Q (Jowett & Ntoumanis, 2003). The definition of criterion validity used by the researchers was one suggested by Shultz and Park (2004) that "criterion validity is assessed by correlating the results of the inventory with the scores on some other inventory, performance, or accomplishment". The researchers adopted the assumption that a wide range of dynamics linked with coaching leadership behaviors, efficacy, motivational climate created by the coach, and coach-athlete compatibility are associated with overall athletic satisfaction (Jowett & Ntoumanis, 2003). Based on this conceptualization Jowett and Ntoumanis (2003) developed two items which measured overall satisfaction of the

coach-athlete relationship and correlated them to each item of the GrCART-Q. The two items were “Did you feel satisfied by your overall coach-athlete relationship?” and “Do you think your coach feels satisfied by your coach-athlete relationship as a whole?” The original intention of the questions were to predict feelings of satisfaction at the time the questionnaire was administered (Jowett & Ntoumanis, 2003). Jowett and Ntoumanis (2003) found a high correlation between the constructs of the three C’s with overall satisfaction providing high levels of criterion validity. It should be noted, however, that there are two methodological concerns that could have confounded the results of the tests of criterion validity. First, the questions developed for the satisfaction subscale were not empirically tested prior to their incorporation of analysis (e.g., pilot study). Also, it has been found by social psychological researchers (Rusbult et al., 1998) that satisfaction does have a positive correlation with levels of interpersonal relationship quality, although a distinct correlation lies between it and other variables that contribute to the relationship as a whole (e.g., relationship alternatives and investment). Specifically, satisfaction does not account for all the variance that explains the entirety of the relationship (e.g., commitment, closeness, and complementarity). Consequently, satisfaction should be used cautiously as a means of criterion support.

The present study defined criterion validity as “the correlation between scores on a test and scores on a criterion measure or standard which is known or accepted as providing scores that can be validly interpreted” (Baumgartner & Hensley, 2006). The measures used for criterion validity were the Investment Model Scale (Rusbult et al., 1998) (See Appendix C), The Relationship Closeness Inventory (Berscheid et al., 1989)

(See Appendix D) and the Sport Interpersonal Relationship Questionnaire (Wylleman, 1995) (See Appendix E).

The Investment Model Scale (Rusbult et al., 1998). The Global Commitment subscale adopted from the more comprehensive investment model scale that taps into various levels of the interpersonal relationship (satisfaction level, quality of alternatives, and investment size) was utilized. The professionals who built the scale supported the exclusive utilization of the subscale in order to gain self-report measures of commitment (Rusbult et al., 1998). The subscale is composed of 7 statements (e.g., “I want our relationship to last for a very long time”) for which participants are supposed to rate their agreeableness with the statement on an 8 point Likert Scale. The scale has received sound psychometric support. During the initial construction studies of the scale internal reliability analysis yielded support with high reliability coefficients ($r = .92 - .95$). Further psychometric testing, within a study testing the avoidance motivation and relationship commitment in intimate relationships, employing confirmatory factor analysis ($CFI = .95$) has added to the validity of the scale (Krudek, 2007).

Relationship Closeness Inventory (RCI; Berscheid et al., 1989). The RCI was the criterion measure for the closeness construct. The RCI was developed based on four criteria. First, that the questionnaire assessed the frequency, diversity, and strength of interaction between the selected dyad through exclusive subscales. Second, the instrument should produce a measure of closeness which encompasses frequency, diversity and strength. Third, the measure should not be specific to different relationship types or populations, but rather have strong external reliability. Lastly, the instrument should be time efficient. The measure aligned with these standards and was composed of

three subscales which required participants to rate their relationship on (a) the frequency of their interactions, (b) the diversity of the activities in which they engage, and (c) the strength of the impact the relationship has on the individual. The frequency subscale asked participants to rate how many hours they spend with the selected individual during different times of the day. The diversity subscale required participants to respond to a 38 item checklist of possible activities the dyad could have engaged in during the past week. The strength subscale was composed of 34 questions that measured the amount of influence the relationship has on the individual. The RCI has received ample psychometric support. Berscheid et al. (1989) administered the questionnaire to a sample of 241 undergraduate college students. They found Chronbach alphas, as well as test-retest reliability scores, between .56 and .90. Also, their findings showed that individuals with close relationships rated high on the RCI, while individuals with more distant relationships scored low.

The Sport Interpersonal Relationship Questionnaire- Athlete-Coach Version (SIRQ-AC; Wylleman, 1995). The SIRQ-AC was employed as the criterion measure for the GrCARTQ subscale of complementarity. Complementarity was a defining characteristic of relationships, primarily conceptualized through the association of status and affiliation. Status referred to the continuum of dominant versus submissive interpersonal styles. Affiliation addressed the level of friendliness versus hostility that characterized an individual's personality type. Complementarity between two members of an interpersonal dyad was achieved when personality styles were opposite on the status and affiliation dimension. Research involving interpersonal theory and research has found that relationships high in complementarity are characterized by low levels of

anxiety, and increased levels of cooperation and closeness. In terms of the coach-athlete dyad, it was hypothesized that a dominant-submissive relationship would reflect high levels of complementarity. For example, a coach who engaged in dominant behaviors would elicit high levels of complementarity among athletes who engaged in submissive behaviors.

The SIRQ-AC measured the interpersonal behaviors that defined the coach-athlete relationship. The questionnaire was composed of 40 questions, which could be reworded to measure either the athletes' actual perception of the relationship, versus their preferences within the relationship. The 40 questions were broken down into constructs – caring behavior, criticism and negative attitude, and permissiveness versus restrictiveness. In order to test the submissive-dominant dimension of complementarity, the present study utilized the permissiveness subscale of the SIRQ-AC, writing the questions in a form which measured the athlete's actual perception of the relationship. The permissiveness subscale tapped into the levels of permissive, indulgent, and easy-going behavior, as compared to restrictive, authoritarian, and hard-nosed behavior of the coach as perceived by the athlete. Each question of the subscale was rated on a five-point Likert scale. Psychometric testing has provided support for the questionnaire with CFI scores of .81 and test-retest validity producing correlation coefficients of .74.

The SIRQ-AC was used as a criterion measure by comparing the permissiveness subscale of the SIRQ-AC to the complementarity subscales of the GrCART-Q. If there was a moderately negative correlation between high levels of complementarity on the GrCART-Q with high levels of coach permissiveness on the SIRQ-AC, criterion validity was assumed.

Procedure

Permission to use human participants in the present study was obtained from the Institutional Review Board for human subjects (See Appendix F). The participant pool was composed of students enrolled in Basic Instructional Program (BIP) courses as well as entry level Kinesiology courses offered at a local university. The primary investigator contacted the instructors of the courses which were selected from the participant pool to receive permission to include their students in the study. The primary investigator then scheduled times to administer the questionnaires to the classes at the convenience of the instructor. The primary investigator trained a research assistant to administer the questionnaires during two sessions of data collection.

The administrator of the questionnaire distributed them to each participant individually, providing them with a writing utensil to complete the survey. Prior to beginning the questionnaire the participants were asked to read the consent form (See Appendix G) that was attached to the front of the questionnaires, while it was verbally explained. The participants then signed and returned the consent form that was placed in a separate envelope. It was emphasized that all information collected was fully confidential, and at any point the participant could withdraw from the study without consequences. After the purpose and procedure of the study were explained, the participants filled out the questionnaires individually. The questionnaires took approximately 10-15 minutes to complete. Once the participants completed the questionnaires they were collected in an anonymous fashion. All participants delivered their questionnaire to the primary investigator who immediately placed them in a second sealed envelope. When the research assistant administered the questionnaires, he

returned the sealed envelopes directly to the primary investigator immediately following the class.

Data Analysis

The data were analyzed through quantitative methods. Once the data were collected the information was entered into an SPSS file. The questionnaires were labeled by the number in which they were entered into the SPSS spread sheet. Descriptive statistics were used to create a demographic profile of the participants. The following statistical tests were performed for each hypothesis:

H₁. Construct validity was established through Confirmatory Factor Analysis (CFA). CFA identified and reinforced the constructs of closeness, commitment, and complementarity of the GrCART-Q.

H₂. Criterion validity was analyzed for each of the three constructs of the 3C's model to the appropriate criterion measure. The closeness subscale of the GrCART-Q was correlated to the RCI. The commitment subscale of the GrCART-Q was correlated to the commitment subscale of the Investment Model Scale. The complementarity subscale of the GrCART-Q was correlated to the submissiveness subscale of the SIRQ-AC. The probability level was set at $p < .05$.

H₃. Tests of reliability analyzed the internal consistency of the data. A Cronbach's alpha was performed with $\alpha > .70$.

Phase II

Participants

The total sample size for phase II was 158 NCAA division I student athletes. Female athletes composed 50.6 percent of the sample ($n = 80$), while 49.4 percent of the sample was accounted for by male athletes ($n = 78$). The mean age of the athletes who participated was 19.98 ($SD = 1.27$), ranging from 18 to 23 years. The athletes represented six different sports from the same university, which included Women's Golf ($n = 12$), Women's Soccer ($n = 18$), Men's Soccer ($n = 19$), Wrestling ($n = 22$), Track and Field ($n = 53$), and Cross Country ($n = 34$). On average athletes played for their coach for 3.5 years ($SD = 1.05$). The majority of the sample was White Caucasian making up 80.4 percent of the sample ($n = 127$). As for the remaining 19.6 percent of the sample, 14.6 percent were African-American ($n = 23$), 1.9 percent were Hispanic ($n = 3$), and Native-American, Asian, and Other represented less than one percent of the sample. There were 132 participants who reported playing for a male coach while 26 of the student-athletes played for female coaches.

Measures

Demographics Questionnaire (See Appendix F). The demographic questionnaire was administered to find the demographic background of each participant, as well as a comprehensive evaluation of their sport background, specifically their interaction with a specific coach.

Greek Coach Athlete Relationship Questionnaire (Jowett & Ntoumanis, 2003). The direct-perspective athlete version of the GrCART-Q (See Appendix B) was utilized to test athletes' perceptions of the coach-athlete relationship. The questionnaire

contained 12 items assessing the constructs of Closeness (4 items), Commitment (4 items), and Complementarity (4 items). The questionnaire items were measured on a 7 point Likert scale (1 = strongly agree; 7 = strongly disagree). This version of the questionnaire has received minimal amounts of psychometric testing, although chi-square ($\chi^2^{(139)} = 89.7, p < 0.001$) and confirmatory factor analysis (CFI = .91) has produced evidence of strong construct validity (Jowett & Clark-Carter, 2006).

Perceived Motivational Sport Climate Questionnaire -2 (PMSCQ-2; Newton & Duda, 1998). The motivational climate was measured by the PMSCQ-2 (See Appendix I). The PMSCQ-2 was measured on a 5-point Likert scale (1 = strongly agree; 5 = strongly disagree). An example of an item measuring the task climate is “On this team the coach wants us to try new skills”. An example of an item measuring the ego-involving climate is “on this team the coach gets mad when a player makes a mistake”. This questionnaire has shown psychometric support through a surfeit amount of studies (Newton & Duda, 1993, 1999; Newton, Duda, & Yin, 2000). Recently, Vazou Ntoumanis, and Duda (2006) tested the construct validity of the questionnaire during a study investigating how the coach- and peer-created motivational climate effected athletes motivation, finding it substantial ($\chi^2^{(480)} = 736.51, p < 0.001, CFI = 0.94$).

Procedure

The participant pool was created from the athletic department at a local university. The associate athletic director was contacted to receive permission so that the coaches of the athletic department could be contacted. Once the teams were selected the coaches were contacted by the athletic director and the primary investigator via email. In the email an informational letter (See Appendix J) was attached that explained the

logistics of the study as well as asking for permission to invite their athletes to participate. The coaches were given a short period of time to review the letter, then the primary researcher followed up with them to receive final consent. After permission was gained, a time was set for the athletes to meet with the researcher in order for the questionnaires to be administered. The meetings with the teams took approximately 10-15 minutes, although the location varied due to practice time and location, and time of season. Two of the teams completed the questionnaires at their practice location following their session, two teams completed the form in a classroom setting, and two teams completed the form prior to a large scale compliance meeting. All administration sessions were relatively similar and free of coach influence.

The questionnaires were personally administered by the researcher. The administrator handed out the questionnaires to each player individually, and provided them with a writing utensil to complete the survey. Prior to beginning the questionnaire the athletes were asked to read the consent form (See Appendix G) attached to the front of the questionnaire while the researcher verbally explained it. Once the consent form was read the participant then signed and returned it to the investigator who placed it in a separate envelope. Furthermore, each participant was given the option to withdraw from the study at anytime without consequences, and informed that all information was completely confidential. After the purpose and procedure of the study was explained, the participants filled out the questionnaires individually. The questionnaires took approximately 10-15 minutes to complete. After the completion of the questionnaires the participants returned it directly to the researcher who put the questionnaire in a sealed envelope.

Data Analysis

The data were collected in an anonymous fashion and then analyzed through quantitative methods. Once the data were collected the information was entered into an SPSS file. The questionnaires were coded by the number in which they were entered into the SPSS spread sheet. Descriptive statistics were used to create a demographic profile of the participants. The following statistical tests were used to test each hypothesis:

H₄. There is a positive relationship between high amounts of perceived closeness within the coach-athlete relationship and a perceived task-oriented motivational climate. A Pearson's correlation coefficient was utilized to test this association.

H₅. There is a negative relationship between high amounts of perceived closeness within the coach-athlete relationship and a perceived ego-oriented motivational climate. A Pearson's correlation coefficient was utilized to test this association.

H₆. Male athletes perceive lower levels of closeness, as measured by the GrCART-Q, than female athletes. A t-test was utilized to compare means between groups.

H₇. There is a positive relationship between high amounts of perceived commitment within the coach-athlete relationship and perceived task-oriented motivational climate. A Pearson's correlation coefficient was utilized to test this association.

H₈. There is a negative relationship between high amounts of perceived commitment with the coach-athlete relationship and perceived ego-oriented motivational climate. A Pearson's correlation coefficient was utilized to test this association.

H₉. Male athletes will not differ from female athletes in their perceptions of the commitment, as measured by the GrCART-Q within the coach-athlete relationship. A t-test was utilized to compare means between groups.

H₁₀. There is a positive relationship between high amounts of perceived complementarity within the coach-athlete relationship and perceived task-oriented motivational climate. A Pearson's correlation coefficient was utilized to test this association.

H₁₁. There is a negative relationship between high amounts of perceived complementarity within the coach-athlete relationship and perceived ego-oriented motivational climate. A Pearson's correlation coefficient was utilized to test this association.

H₁₂. Male athletes will perceive lower levels of complementarity, as measured by the GrCART-Q, than female athletes. A t-test was utilized to compare means of the two groups.

Exploratory Question

Q₁. Will the gender of the coach have a significant effect on the athlete's direct perspective of the coach-athlete relationship? A t-test was utilized to compare means of the two groups.

Chapter 4

Results

The presentation of results for Phase I will provide the psychometric analysis of the GrCART-Q with a population of American college-aged students. The Phase II results will explore the associations between perceptions of the coach-athlete relationship and athletes' perceptions of the motivational climate.

Phase I

Descriptive Statistics

The GrCART-Q. The mean scores and standard deviations provided insight into the responses of this sample on the scale being tested. The mean scores of the GrCART-Q were skewed toward the higher end of the 7 point Likert scale, ranging from 5.16 to 5.83 (See Table 1). In general students perceived a positive relationship with their past coaches. The standard deviations around these scores were moderate, with the highest being 1.63 for item 8, and the lowest being 1.27 for item 11. These findings were consistent with past literature examining the psychometrics of the scale, suggesting that an American population reacts to the instrument in a similar manner to European samples (Jowett, 2006).

Table 1

Means and Standard Deviations of the Direct-perspective GrCART-Q Items

Item	1	2	3	4	5	6	7	8	9	10	11	12
Mean	5.63	5.71	5.79	5.44	5.48	5.67	5.47	5.16	5.39	5.44	5.83	5.30
Standard Deviation	1.60	1.49	1.61	1.53	1.60	1.43	1.50	1.63	1.41	1.37	1.27	1.60

Exploratory and Confirmatory factor Analysis

Factor analysis is defined as the reduction of correlated items within an instrument to a smaller number of latent or hidden variables (Tinsley & Tinsley, 1987). Two types of factor analyses were used: (a) exploratory factor analysis, in which a variety of variables were reduced to an underlying structure; and (b) confirmatory factor analysis, which was used to support or refute empirically and theoretically proposed structures. The initial step in a factor analysis was to find the intercorrelations of all the statements of the GrCART-Q (See Appendix K). The result of the Pearson correlation revealed that the 12 items of the GrCART-Q were highly correlated. Consequently, the initial exploratory factor analysis with varimax rotation resulted in the extraction of only one factor, explaining 71 percent of the variance (See Table 2). If the purpose of the present study was to construct an interpersonal scale, revisions to questionnaire items would have been made at this point. However, the goal was to verify the conceptual propositions of the 3 C's model. Further, the preliminary finding of a one factor structure was supported by the theoretical arguments made by Jowett and Ntoumanis (2003) that the three constructs of the 3C's were encapsulated within a general coach-athlete relationship component.

Based on the exploratory factor analysis, along with the understanding that confirmatory factor analysis is the most useful factorial technique, a second order confirmatory factor analysis was conducted through the statistical software Mplus (Muthen & Muthen, 2007) (See Table 3). Brown (2006) argued that the second-order model should be grounded on strong conceptual and empirical postulates. Subsequently, the decision to conduct the psychometric procedure was based on Jowett and colleagues

(Jowett, 2006; Jowett & Clark-Carter, 2006) conceptual and theoretical assertions.

Therefore, a second-order factor analysis was conducted to determine if the 12 different relationship items of the GrCART-Q were representative of the latent constructs of closeness, commitment, and complementarity. In order to evaluate whether to retain or reject the scale after it was subjected to confirmatory factor analysis, tests of model fit, tests of localized strain, and interpretations of factor loadings were taken into consideration.

Table 2

Exploratory factor analysis factor loadings

Items of the GrCART-Q	Principal Axis Factor Loadings
	Factor 1
1.) I like my coach.	.918
2.) I trust my coach.	.892
3.) I respect my coach.	.892
4.) I feel that the training I received under my coach is gratifying and satisfying.	.800
5.) I appreciate my coach's sacrifices in order to improve my performance.	.876
6.) I cooperate well with my coach so that our goals are achieved.	.785
7.) I communicate well with my coach.	.735
8.) I identify with / understand my coach.	.880
9.) When I am coached by my coach, I feel capable.	.809
10.) When I am coached by my coach, I am concerned / interested.	.855
11.) When I am coached by my coach, I am ready to do my best.	.779
12.) When I am coached by my coach, I am supported / understood.	.871

Tests of model-fit. Based on the suggestions of Jowett (2006), a two-index presentation strategy focusing on SRMR (Standardized Root Mean Square Residual; Cut off value > .05) and CFI (Comparative Fit Index; Cut off value > .94) outputs were used to make positive conclusions concerning the model fit (See Table 3).

Jowett (2006) proposed that SRMR is a superior index compared to other fit indices because of its ability to discriminate well-fitting models, and that CFI is “resistant against the violation of the assumption of multivariate normality (Jowett, 2006)”. The CFI evaluates how well a model fits compared to an independent model, while the SRMR measured the discrepancy between observed and predicted co-variances. She based this argument on the statistical advice provided by Hu and Bentler (1999), Bentler and Bonett (1980), and Curran, West, and Finch (1996).

Table 3

Model fitting for the GrCART-Q direct-perspective.

	χ^2	Degrees of Freedom	CFI	SRMR
GrCART-Q Direct Perspective: Basic Second-order Factor Model	232.99	51	.94	.038

Curran, West, and Finch (1996) postulated that when using CFA models certain assumptions should be considered. One assumption that the researchers addressed was the need for multivariate normality of the measure within the population. Although, Micceri (1989) argued that behavioral science data are rarely normally distributed at a multivariate level. In response to this challenge Curran, West, and Finch (1996) suggested that certain goodness of fit tests must be abandoned (e.g., Chi-Square). In

support of these contentions Brown (2006) stated that Chi-Square values have the tendency to have a marked floor effect when data are not normally distributed on a multivariate level, and/or the sample size is relatively small (e.g., $N < 250$). The present data were both complex and non-normal on a multivariate level, and has a sample size less than 250.

Bentler and Bonett (1980) also cautioned not to overemphasize inflated Chi-Square and significance values, and to use additional information in evaluating models. Further, through statistical examples the researchers argued that comparative fit indices exceeding .90 are sufficient indicators to accept a model. Moreover, Hu and Bentler (1999) argued that the SRMR is a good indicator of fit for sample sizes less than 250. The cut off value presented for the SRMR was .05. The researchers also supported the use of the CFI for non-normal distributions and small sample sizes. Therefore, the CFI score of .94 and the SRMR score of .038 provided support for the three factor structure of the GrCART-Q for an American sample, and its use in phase II of the present study.

Interpretation of the residuals and factor loadings. The goodness of fit tests were limited in that they only provide a general indication of how well the model reproduces the relationships among the variables put into the test protocol (Brown, 2006).

Statisticians have called for the need to look at localized areas of strain within a model in order to get a better understanding of why the model is a good or ill fit. The most common avenue to identify localized areas of strain was to analyze the residuals and interpret the factor loadings (Brown, 2006).

The analysis of the residuals provided specific information concerning the degree of variance produced by the model's parameter estimates. Each variable or indicator

within the model has a residual, although the raw data points provided by the computer output are not useful until standardized. Therefore, only the standardized residuals, computed by dividing the fitted residuals by their estimated standard errors, were

Table 4

Factor loadings, standardized residuals, and parameter estimates for the GrCART-Q

Items of the GrCART-Q	Factor Loadings			Est./S.E	Parameter Est.
	Close.	Comm.	Comp.		
1.) I like my coach.	1	-	-	0.00	6.93
2.) I trust my coach.	.91	-	-	27.84	8.41
3.) I respect my coach.	.97	-	-	27.39	8.54
4.) I feel that the training I received under my coach is gratifying and satisfying.	.80	-	-	18.53	10.04
5.) I appreciate my coach's sacrifices in order to improve my performance.	-	.88	-	16.30	9.68
6.) I cooperate well with my coach so that our goals are achieved.	-	.86	-	19.73	8.66
7.) I communicate well with my coach.	-	.87	-	17.86	9.31
8.) I identify with / understand my coach.	-	1	-	0.00	8.25
9.) When I am coached by my coach, I feel capable.	-	-	.88	20.90	8.31
10.) When I am coached by my coach, I am concerned / interested.	-	-	.75	15.81	9.84
11.) When I am coached by my coach, I am ready to do my best.	-	-	.68	15.25	9.93
12.) When I am coached by my coach, I am supported / understood.	-	-	1	0.00	8.20

used for the analysis of strain. These standardized residuals were analyzed in a similar fashion to a z-score. Therefore, these values were compared to the critical value of 1.96 because the sample size was less than 250. Based on this criterion there were no

significant areas of strain, and each standardized residual exceeded the critical value of 1.96. The absence of local areas of strain verified the goodness of model fit.

Factor loadings. A primary goal of confirmatory factor analysis was to verify the underlying dimensions of the instrument, as well as the relationship patterns between items and higher order factors. The factor loadings provided an indication of how well each item within an instrument loads onto a selected factor. The factor loadings for the present study tended to be relatively high, indicating that each item loads strongly onto the factors proposed by Jowett and Ntoumanis (See Table 4). Therefore, the three factor structure proposed by the GrCART-Q was employed in Phase II.

Criterion Validity

The definition of criterion validity, (e.g., “the correlation between scores on a test and scores on a criterion measure or standard which is known or accepted as providing scores which can be validly interpreted”) provided by Baumgartner and Hensley (2006), was used for the present study. A Pearson’s correlation coefficient was used to correlate each subscale to its respective measure (e.g., Investment Model Scale (Rusbult et al., 1998), The Relationship Closeness Inventory (Berscheid et al., 1989), and the Sport Interpersonal Relationship Questionnaire (Wylleman, 1995). Coefficients ranging between .30-.70 with a p-value < .05 indicated a significant correlation, leading to the conclusion that the chosen subscale of the GrCART-Q was a valid measure (Nunnally, 1978).

The Investment Model Scale. The Global Commitment subscale, that has received psychometric support for its individual use, was developed by Rusbult et al. (1998). It was hypothesized that there would be a positive correlation between the Commitment

subscale of the GrCART-Q and the Global Commitment Subscale. The Pearson correlation coefficient indicated that there was a significant association between the Global Commitment Subscale and the commitment subscale of the GrCART-Q, ($r(231) = 0.602, p < .05$). This correlation coefficient signified that there was a moderately positive relationship between the two measures

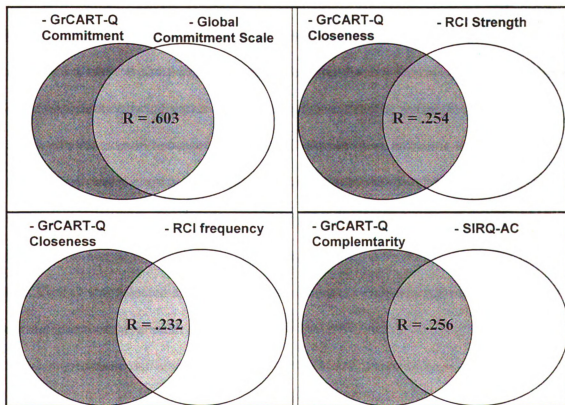
Relationship Closeness Inventory. It was hypothesized that both the strength and frequency subscale of the RCI would have a positive correlation with the Closeness subscales of the GrCART-Q. For the correlation between the GrCART-Q and the strength subscale, a Pearson's correlation indicated a low but significant association, ($r(231) = 0.254, p < .05$). The correlation between the GrCART-Q and the frequency subscale of the RCI was also low but significant, ($r(231) = 0.232, p < .05$). Both of these significant findings indicated there was a positive relationship between the subscales; however, this relationship was low based on Nunally's (1978) postulates. The Pearson's r of .232 does not provide criterion support for the current measure. However, due to the uniqueness of the relationships formed in the sport domain (e.g., measured by the GrCART-Q) as compared with general relationships (e.g., measured by the RCI), this correlation was interpreted with caution. The correlation coefficient was significant and approached an r -value of .30 providing low levels of criterion validity. Therefore, it was concluded appropriate to use, with caution, the GrCART-Q closeness subscale in Phase II.

The Sport Interpersonal Relationship Questionnaire - Athlete-Coach Version (SIRQ-AC). The SIRQ-AC was employed as the criterion measure for the GrCART-Q subscale for complementarity. It was hypothesized that the Complementarity subscale of

the GrCART-Q and the SIRQ-AC permissiveness subscale would be negatively correlated. The correlation between the GrCART-Q Complementarity subscale and the permissiveness subscale was significant, ($r(231) = 0.256, p < .05$). The significant positive relationship between the subscales did not provide support for the initial hypothesis, although this finding was interpreted with hesitation due to several factors that may have produced these results. First, the low correlation between the two measures may have been due to the difference in cultural practices in which the scales were developed (e.g., SIRQ in Belgium vs. GrCART-Q in Greece). Second, the conceptualization of a dominant-submissive coach-athlete relationship may not have been captured by solely utilizing the permissive subscale of the SIRQ-AC.

Figure 1

Pearson's correlation coefficient for criterion measures



Reliability

Reliability tests, using a Cronbach's alpha, were performed for each subscale of the GrCART-Q. The value used for the cutoff of .70 was suggested by Nunnally (1978). Cronbach's alpha indicated high levels of internal consistency for closeness ($\alpha = .944$), commitment ($\alpha = .912$), and complementarity ($\alpha = .904$). The overall reliability score for the GrCART-Q indicated high support for internal consistency ($\alpha = .96$). Therefore, we accepted the utilization of the GrCART-Q as a reliable measure for investigating the associations between the coach-athlete relationship and perceptions of the motivational climate.

Summary

It was concluded that the GrCART-Q was valid for use within an American population. In terms of construct validity, second order confirmatory factor analysis indicated an overall model fit that was satisfactory based on recent statistical guidelines (Brown, 2006; Jowett, 2006). Further, it was found that the GrCART-Q has low levels of criterion validity. It should be noted, however, that the correlation between the closeness and complementarity subscales and their respective criterion measures should be analyzed with caution because of conceptual (e.g., sport vs. romantic relationships) and cultural (e.g., scale construction) characteristics of the criterion scales employed, as well as the design (e.g., recall effects) of the study. Lastly, the GrCART-Q produced high levels of reliability for each of the three subscales. Based on the above results, the GrCART-Q was selected as the instrument to measure interpersonal relationships in the second phase of the present study.

Phase II

The purpose of Phase II was to test for associations between the 3C's (e.g., closeness, commitment, and complementarity) and athlete perceptions of the motivational climate. Moreover, gender differences between closeness, commitment, and complementarity within the coach-athlete relationship were analyzed.

Descriptive Statistics

Descriptive statistics were utilized to create a greater understanding of the data, as well as create an awareness of possible associations. In terms of validation, the mean scores for the GrCART-Q were compared to the scores found in phase-I and past literature. The mean scores for the individual items of the GrCART-Q for this sample ranged from 4.7 to 5.7 (See Table 1). Similar to Phase-I and recent studies testing the psychometrics of the GrCART-Q, the mean scores for the three constructs were skewed toward the higher end of the seven point Likert scale, indicating that athletes within this sample perceived the relationship with their coach to be positive (See Table 5; Jowett, 2006). These descriptive results provided face validity for the Phase-II data relating to the coach-athlete relationship.

Descriptive statistics were also utilized to target potential associations between the three constructs that operationally define the coach-athlete relationship within the 3 C's model and perceptions of the motivational climate. Athletes generally reported higher levels of mastery-oriented climates as opposed to ego-oriented climates (See Table 5). These findings were consistent with previous research that employed the PMSCQ-II (Duda & Whitehead, 1998). These descriptive statistics produced face validity for the PMSCQ-II, and confidence for its utilization in testing for associations between high

levels of commitment, closeness, and complementarity and perceptions of the motivational climate.

Table 5

Means and Standard Deviations of the GrCART-Q and PMSCQ-II Subscales

Subscale	GrCART-Q Closeness	GrCART-Q Commitment	GrCART-Q Complementarity	PMSCQ-II Mastery	PMSCQ-II Ego
Mean	5.41	5.11	5.31	4.0	3.1
Standard Deviation	.124	.117	.109	.044	.057

Hypothesis testing

It was hypothesized that high levels of perceived closeness would be positively associated with perceptions of a mastery-oriented climate. To test for this association a Pearson's correlation coefficient was employed. A significant positive relationship between high levels of closeness and a mastery-oriented climate was found, ($r = .54$, $p < .05$). Therefore, the current hypothesis was supported.

It was hypothesized that high levels of closeness would be negatively associated with perceptions of an ego-oriented climate. To test for this association a Pearson's correlation coefficient was used. A significant negative relationship between high levels of closeness and an ego-oriented climate was found, ($r = -.50$, $p < .05$). Therefore, the current hypothesis was supported.

It was hypothesized that male athletes perceive lower levels of closeness within the coach-athlete relationship than do female athletes. To test for gender differences between perceptions of closeness within the coach-athlete relationship, a two-tailed independent samples t-test was used. The relationship between gender and perceptions of

closeness within the coach-athlete relationship was not significant, ($t_{(156)} = 1.45, p > .05$).

Therefore, the present hypothesis was not supported, (See Table 6).

Table 6

Mean scores and standard deviations for male and female athletes' perceptions of the coach-athlete relationship and perceptions of the motivational climate

Descriptive Statistics	Gender of the athlete	Sample Size	Mean	Standard Deviation
GrCART-Q	Male	78	5.60	1.61
Closeness	Female	80	5.24	1.49
GrCART-Q	Male	78	5.31	1.47
Commitment	Female	80	4.92	1.45
GrCART-Q	Male	77	5.44	1.35
Complementarity	Female	79	5.19	1.36
Mastery-	Male	77	4.02	.52
Climate	Female	79	4.07	.58
Ego-	Male	76	3.08	.711
Climate	Female	78	3.17	.711

It was hypothesized that high levels of perceived commitment would be positively associated with perceptions of a mastery-oriented climate. To test for this association a Pearson's correlation coefficient was used. A significant positive relationship between moderate levels of commitment and a mastery-oriented climate was found, ($r = .52, p < .05$). Therefore, the current hypothesis was supported.

It was hypothesized that high levels of commitment would be negatively associated with perceptions of an ego-oriented climate. To test for this association a Pearson's correlation coefficient was used. A significant negative relationship between moderate levels of commitment and an ego-oriented climate was found, ($r = -.47, p < .05$). Therefore, the present hypothesis was supported.

It was hypothesized that male and female athletes would not differ in their perceptions of the commitment within the coach-athlete relationship. To test for gender differences between perceptions of commitment within the coach athlete relationship, a two-tailed independent samples t-test was used. The relationship between gender and perceptions of commitment within the coach-athlete relationship was not significant, ($t_{(156)} = 1.66, p > .05$). Therefore, the present hypothesis was supported, (See Table 6).

It was hypothesized that high levels of perceived complementarity would be positively associated with perceptions of a mastery-oriented climate. To test for this association a Pearson's correlation coefficient was used. A significant positive relationship between moderate levels of complementarity and a mastery-oriented climate was found, ($r = .51, p < .05$). Therefore, the present hypothesis was supported.

It was hypothesized that high levels of complementarity would be negatively associated with perceptions of an ego-oriented climate. To test for this association a Pearson's correlation coefficient was used. A significant negative relationship between complementarity and an ego-oriented climate was found, ($r = -.49, p < .05$). Therefore, the present hypothesis was supported.

It was hypothesized that male and female athletes would not differ in their perceptions of the complementarity within the coach-athlete relationship. To test for gender differences between perceptions of complementarity within the coach-athlete relationship, a two-tailed independent samples t-test was used. The relationship between gender and perceptions of complementarity within the coach-athlete relationship was not significant, ($t_{(156)} = 1.19, p > .05$). Therefore, the present hypothesis was supported, (See Table 6).

Exploratory Question

The exploratory question concerning differences between male and female coaches was analyzed by using a two-tailed independent samples t-test. Findings revealed that there were no significant differences between closeness ($t_{(156)} = .004$, $p > .05$), commitment ($t_{(156)} = -.121$, $p > .05$) and complementarity, ($t_{(156)} = .00$, $p > .05$) within the coach-athlete relationship as a function of coach gender (See Table 7).

Table 7

Mean scores and standard deviations for athletes, with different gender coaches, perceptions of the coach-athlete relationship, and perceptions of the motivational climate

Descriptive Statistics	Gender of the coach	Sample Size	Mean	Standard Deviation
GrCART-Q	Male	132	5.414	1.639
Closeness	Female	26	5.413	1.077
GrCART-Q	Male	132	5.106	1.527
Commitment	Female	26	5.144	1.154
GrCART-Q	Male	130	5.317	1.404
Complementarity	Female	26	5.317	1.113
Mastery-Climate	Male	130	4.044	0.559
	Female	25	4.066	0.498
Ego-Climate	Male	128	3.106	0.730
	Female	26	3.226	0.607

Summary

In conclusion, the hypotheses referring to the predictive ability of the GrCART-Q and athletes' perceptions of the motivational climate were supported. Positive relationship perceptions that are rich in closeness, commitment, and complementarity were correlated with athlete perceptions of mastery-oriented climate. Conversely, when athletes perceived low levels of closeness, commitment, and complementarity, they perceived the motivational climate to be more ego-involved. It is important to note that

the present analyses do not indicate causation, therefore it is not determined whether the motivational climate induces close relationships or vice versa. There were no significant differences between male and female athletes in the present sample in terms of their perceptions of the coach-athlete relationship. Finally, an analysis of the exploratory question concerning how the gender of the coach would influence athletes' perceptions of their relationship revealed only one significant difference. In conclusion, the associations found between the 3C's and the perceived motivational climate suggests that higher levels of closeness, commitment, and complementarity within the coach-athlete relationship will produce more conducive athlete perceptions of the motivational climate.

Chapter 5

Discussion

Phase I

The purpose of this study was to replicate and extend past research that analyzed the psychometric properties of the direct perspective of the GrCART-Q, specifically through the implementation of confirmatory factor analysis, and the assessment of criterion validity. The researcher was also interested in analyzing the predictive validity of the instrument in terms of athlete perceptions of the motivational climate. Lastly, gender differences in athlete perceptions of the coach-athlete relationship were also explored.

The initial step of psychometric testing for Phase I was to analyze the descriptive statistics of the GrCART-Q. This analysis indicated that the majority of participants perceived their coach-athlete relationship to be positive and moderately high in closeness, commitment, and complementarity. Past research investigating the psychometrics of the instrument found similar results, reporting mean scores for all items of the GrCART-Q between 5 and 6.5 on a 7 point Likert scale (Jowett, 2006; Jowett & Clark-Carter, 2006; Jowett & Ntoumanis, 2003). This trend is positive from a practical point of view, considering that negativity within the coach-athlete relationship would preclude a positive psychosocial outcome (Phillippe & Seiler, 2006). Also, the goal of interpersonal relationship research is to learn how to eliminate destructive coach-athlete relationships and maximize positive outcomes, consequently decreasing drop out rates (Jowett, 2007)

Methodologically, the consistency of positive findings reflected potential design issues, specifically in terms of re-call effect. McFarland and Buehler (1998) found that

how an individual attributes their past experiences will confound the recall of emotional and interpersonal incidents. For example, they found that people who have a reflective-orientation (e.g., being open to examining all factors of self) toward the recall of memories will not be as accurate as, and will be more positive than, individuals who are ruminatively-oriented (e.g., neurotic tendency to dwell on negative aspects of the self) in their recall and memory of moods. Moreover, Loftus (2003) also argued that the role of suggestion concerning past memories is extremely powerful, and that false memories can be manufactured if an individual is directed toward a specific type of memory. The items of the GrCART-Q were worded in a directive and positive manner, possibly leading toward positive recollections when participants were asked to rate relationships of their past. Future researchers should be cautious when employing a sample that is not composed of participants that are currently involved in a coached sport due to the increased risk of a re-call effect.

The positively skewed data resulted in high intercorrelations between the individual items of the GrCART-Q. Consequently, all items loaded onto one factor during exploratory factor analysis. These findings indicated that the individual items of the GrCART-Q do effectively measure the quality of the coach-athlete relationship. For example, athletes who perceived their relationship as positive reported high levels of closeness, commitment, and complementarity, while athletes with negative relationship perceptions rated all 3 C's low. However, the results indicated strongly that it is more appropriate to use the items of the GrCART-Q to measure the coach-athlete relationship from a more global perspective, rather than categorizing them into the three factor structure proposed by Jowett and Ntoumanis (2003). LaVoi (2007a) recently investigated

the interpersonal construct of closeness within the coach-athlete dyad. The researcher concluded that athletes described a “close” relationship with their coach as including affect, cognitive, and behavioral processes. These findings, along with the present results, warrant that future attention be directed toward the conceptual development and differentiation of the constructs within the 3 C’s model. Previously, coach-athlete relationship research (Jowett, 2003) called for future research to attempt to understand how the constructs are interrelated. Since then quantitative studies have found that the constructs are correlated, although minimal attention has been given to how closeness, commitment, and complementarity are intertwined. A pre-requirement for this work is a more cogent explanation of the underlying processes of the coach-athlete relationship (Jowett, 2003).

The interrelation between the measurement items indicated that the three C’s may be more unified than previously hypothesized. For example, if athletes have positive perceptions of their relationship, they would rate all three C’s high on a seven point Likert scale, and, if athletes were engaged in a low quality relationship with their coach, they would rate all three C’s low. Further, the version of the GrCART-Q employed is composed of only 12 items, while the British version (e.g., the CART-Q) has only 11 items. Compared to other interpersonal quantitative measures (e.g., the RCI, the Investment Model Scale), the GrCART-Q is limited in terms of question diversity, and therefore may be lacking depth of measurement. Recently, an extended version of the CART-Q has been developed. Rhind and Jowett (2007) discussed the newly improved scale in terms of coaches’ perceptions at the 12th European Congress of Sport Psychology. Further, Jowett (2007) argued that this extended version may be more

effective at differentiating between the 3 C's, subsequently capturing a more in-depth evaluation of the coach-athlete relationship.

Past researchers have recognized that there is a global coach-athlete relationship that subsumes the 3 C's. Traditionally, to overcome this dilemma, confirmatory factor analysis has been employed. Brown (2006) and others (Hu & Bentler, 1999) suggested that it is appropriate to run confirmatory factor analysis on data if there is sound empirical and theoretical support. If the present study was focused on scale development, modification to the items would be warranted at this stage of factor analysis. However, the present study continued in its exploration of construct validity based on the conceptual support of the constructs provided by the 3 C's model. The confirmatory factor analysis provided support for the three factor structure of the GrCART-Q, but only when analyzed by the standards presented by Jowett (2006). Jowett's proposal to exclusively use the CFI and the SRMR as the indicators of goodness of fit was supported by several authors (Brown, 2006; Hu & Bentler, 1999), although if the traditional requirements of CFA were employed, the model would have been deemed an ill-fit. Specifically, there was a marked ceiling effect for the Chi-Square value, as well as an RMSEA value greater than one. Both of these statistical outputs indicated that the items of the GrCART-Q that measure closeness, commitment, and complementarity should be modified for higher levels of validity for use within the American population. These results could have occurred due to the non-normality of the data, the small sample size, as well as the high correlations between all items. The following discussion has focused on the appropriateness of specific items and potential modifications to the scale with special consideration given to cultural differences.

Appropriateness of the GrCART-Q Items and Potential Modification. The first three items of the GrCART-Q were highly correlated and appropriately measured closeness within an American population. These items overtly measured the aspects that operationally define closeness in terms of the 3 C's model (e.g., like, trust, and respect). The fourth item of closeness was statistically out of place. This item evaluated an emotional outcome (e.g., gratification, satisfaction) of the relationship that is known to be affected by other psychosocial variables (e.g., complementarity / coaching behavior). Further, Jowett and Ntoumanis (2003) employed satisfaction as their criterion measure for the relationship scale as a whole. Therefore, this item may be perceived as a more universal measure of relationship quality by the athlete. The 3 C's model defined the fourth aspect of closeness to be appreciation. Therefore, an item that referred to how much an athlete appreciates their coach-athlete relationship would be a more salient measure of closeness. This idea of appreciation was included in item five, which is classified as a measure of commitment within the GrCART-Q. Also, item number five was more closely related statistically to the first three items of closeness, as compared to the commitment items.

When the subscale of closeness was compared to the RCI (Berscheid et al., 1989), there was a low correlation between the two measures concluding low criterion support. Closeness within the coach-athlete relationship may be conceptualized differently than romantic or family relationships. Coach-athlete relationships should not be romantic, however, coaches do talk about the team being a family, albeit, not a traditional family. Although, if the postulates of Jowett and Meek (2000) hold true that there is a definitive overlap of emotions, behaviors, and cognition between these two types of relationships,

then this should not be the primary reason for the low correlation (Jowett & Meek, 2000). A more supportable explanation would be that the definition of closeness used by social psychological interpersonal researchers and sport researchers are different. For example, non-sport researchers referred to closeness as the amount of influence, similarity, and time spent between members of a dyad. Neither the GrCART-Q nor the British version of the CART-Q incorporated any of these aspects of closeness; instead, they strictly focused on the affective outcomes of the relationship (Jowett, 2007). Finally, time spent together may not be a good indicator of closeness within the sport domain; however, influence of the relationship could be an intricate aspect of coach-athlete closeness that the present scale does not capture.

The items that measure commitment within the GrCART-Q were substantially interrelated, and were a cohesive measure with the exception of Item 5, which was a more appropriate measure of closeness. Criterion validity supported the suitability of the construct, although culture could play a role in the conceptualization and item development of this construct. Within the Greek culture, it has been confirmed that individuals will be more committed to members of their “in-group”, or individuals who have a common fate (Triandis & Vassiliou, 1972). Collectivist cultures would perceive members of their “in group” to be more homogeneous. Individualistic cultures would perceive “in group” members to be more heterogeneous, and place the individual as the unit of analysis (Triandis, McCusker, & Hui, 1990). Further evaluation of the commitment items within the GrCART-Q revealed that they referred to aspects of the relationship that suggest similarities between the two members of the dyad (e.g., shared goals, level of communication, understanding). Conversely, more American-based

commitment scales referred to desire to maintain relationships, as well as including the dynamic of time (Rusbult et al., 1998). Moreover, recent reports have suggested that the Greek culture is becoming more individualistic with the emergence of industrial development and the higher importance of nuclear families (Georgas, 1989). Therefore, to create a more appropriate scale for both eastern and western populations, questions that referred to the cognitive desire to maintain a relationship over time should be included.

Lastly, all four items of the complementarity subscale referred to the behavioral aspect of the relationship that is being measured. The items of the complementarity subscale correlated more strongly with each other than with the items of the other two constructs. Comparing the complementarity items to the British version of the GrCART-Q revealed that the two versions were extremely similar and only slight differences in wording and terminology exist. This study hypothesized that in order for high levels of criterion validity to exist, a coach must be viewed as the more dominant figure in the relationship, and the athlete must adopt a more submissive stance. This hypothesis was not supported. One explanation was that complementarity may be breached as a result of an athlete deviating from the expectations that they should act in a submissive nature. Also, the complementarity scale was positively correlated with permissiveness at a significant level, exactly opposite of what was hypothesized. This result was supported by the notion that if complementarity were to exist within the coach-athlete dyad, coaches must be controlling and dominant, while maintaining a friendly and responsive character.

Model Limitations and Future Directions. This study highlighted the limitations of the GrCART-Q within individualistic cultures and potential modifications to increase its validity within an American population. Three proposed changes were suggested to

reduce the limitations. First, Item 5 would be more appropriate as a measure of closeness. Second, more depth of investigation of the constructs is needed (e.g., more items employed to differentiate between constructs). Finally, certain cultural contrasts may have played a role in the conceptualization of certain questions (e.g., commitment defined as shared attributes vs. the cognitive desire to continue the relationship over time). These changes would bolster the notion set forth by Jowett and Ntoumanis (2003) that the interpretation of the constructs of the 3 C's are different between collectivist and individualistic cultures.

Future research that addresses the quantitative measurement of coach-athlete relationships among western populations (e.g., U.S.A., Canada) should compare and contrast the GrCART-Q with the CART-Q. This would help provide insight into universal constructs of coach-athlete relationships that could provide cultural generality (Georgas & Mylonas, 2006). There were more similarities than differences between the two measures; however, both possessed strengths from a conceptual and cultural perspective. Further, psychological anthropologists have warned interpersonal relationship researchers within the U.S.A. to be cautious when employing quantitative scales due to the diverse cultural and ethnic background that will comprise a true random sample (Bock, 1994). Therefore, it would be necessary to develop research methods, within the realm of coach-athlete relationships, that are robust and less dependent on cultural differences (Triandis, 1975).

Coach-athlete relationship research has been given little attention by North American sport psychologists. Knowledge of the coach-athlete relationship within the present population was limited, despite the research efforts of sport relationship

scientists. Consequently, researchers studying American populations would be breaking fresh ground as they begin the empirical quest for conceptual and theoretical understanding and must take appropriate methodological precautions (LaVoi, 2007b). Therefore, qualitative studies that explore how American athletes conceptualize coach-athlete relationships, through the implementation of the 3 C's model as a conceptual framework, would be warranted. When constructing these studies several guidelines presented by Kim and Berry (1993) related to cross-cultural research should be considered: (a) contextual understanding (e.g., club vs. school sport, competitive level, type of sport), (b) consideration of all cultures (e.g., Mexican-American, Cuban-American, Asian-American, African-American), and (c) employment of multiple methods and methodology (qualitative vs. quantitative). These guidelines would help researchers consider the dynamics of the North American sporting environment that cause the coach-athlete relationship to be unique. The GrCART-Q was not the most appropriate scale for interpersonal investigation within the present sample; however, its use for investigating how the coach-athlete relationship was associated with the motivational climate in the second phase of this study was statistically supported and provided interesting and relevant findings.

Phase II

The primary purpose of Phase II was to test for the association between the quality of the coach-athlete relationship, as measured by the GrCART-Q, and perceptions of the motivational climate. Another purpose was to investigate how athlete gender may influence perceived coach-athlete relations. Further, an exploratory question that addressed the influence of coach gender on athlete perceptions of the coach-athlete

relationship was included. The findings related to the first set of hypotheses, that address the predictive validity of the 3 C's in terms of the motivational climate, will be discussed from both a behavioral leadership (e.g., coaching behaviors) and interpersonal perspective (e.g., coach-athlete relationship). The results concerning the effects of gender differences will be used as a platform to discuss implications and future directions of the present study.

Behavioral perspective. The hypotheses that projected a positive association between high levels of commitment, closeness, and complementarity and a mastery-oriented climate, as well as a negative association between high levels of the 3 C's and an ego-oriented climate were statistically supported. Thus, when the motivational climate revealed that the coach-athlete relationship was perceived as positive, athletes viewed their training environment as focused on hard work and team camaraderie. Also, the athletes were more likely to report that their coach provided high levels of positive reinforcement, and had the ability to make each athlete feel significant. Conversely, when athletes reported low quality relationships, their perceptions of the training environment were normatively focused (e.g., competition was encouraged, mistakes were punished, and only the best players received praise). These findings can be interpreted in light of past literature that has reported how coaches impact and induce mastery- and ego-oriented motivational climates from a classic behavioral perspective (Ames, 1992b; Black & Weiss, 1992; Newton et al., 2000).

The results for complementarity (e.g., the behavioral aspect of the relationship) paralleled the results of past research in regard to coaching behaviors and perceptions of the motivational climate. For example, athletes who rated high on Item 12 of the

GrCART-Q, (e.g., “when I am coached by my coach I am supported / understood”), had coaches who provided high levels of social support and were concerned about the athletes’ welfare. Another example of this relationship is Item 9 (e.g., “when I am coached by my coach I feel capable”) which could only have occurred if a coach provided high amounts of contingent positive reinforcement and encouragement. Coaches who engage in training and instruction, positive reinforcement, and mistake contingent technical feedback are associated with athletes that have higher levels of perceived competence, which in this case can be compared to feeling capable (Black & Weiss, 1992; Horn, 1985). Therefore, coaches who create a mastery-oriented climate would be more likely to engage in behaviors conducive to higher levels of complementarity within the coach-athlete relationship, or vice versa.

In terms of closeness, positive coaching behaviors (e.g., technical instruction, positive reinforcement, mistake contingent encouragement) were essential in order for athletes to like, respect, care for, and appreciate their coach. Smith and colleagues (Barnett et al., 1992; Smith., Smoll., & Curtis, 1979; Smoll, Smith, Curtis, & Hunt, 1978) supported this contention, finding that athletes’ reported having high levels of enjoyment, gratification, and liked their coaches more when they provided positive reinforcement and training and instruction. Lastly, leadership behaviors that create mastery-oriented climates were more conducive to positive communication and inter-team cooperation. Consequently, team members were more likely to feel important, identify with, and understand their coach. These interpersonal characteristics resulted in higher levels of relational commitment (Graen & Cashman, 1975; Jowett, 2003; Newton & Duda, 1999; Newton et al., 2000).

The coach was the primary factor in manipulating the motivational climate through the engagement of specific behaviors; however, it was not clear if these behaviors were related to forming high quality coach-athlete relationships. An interesting expansion of this study would be to assess both coach and athlete behaviors and test if they were related to either high or low quality relationships. Also, it would be interesting to measure how much variance of the motivational climate was explained by coaching behaviors in combination with the quality of the coach-athlete relationship. Finally, athletes desired coaches who were both competent in providing specific sport instruction, and had the ability to make them feel included through effective communication of their feelings. The mechanisms for this were both affective (e.g., warmth, care, and interest), cognitive (e.g., preparation, assistance, patience), and behavioral (e.g., positive encouragement, comfort to talk about anything, genuineness) (Carron & Bennett, 1977; Jowett & Cockerill, 2003; Poczwardowski et al., 2002). Future research should consider these findings in two areas: (a) the evaluation of coaching education programs that are currently in place, and (b) the development of more contemporary programs, considering the lack of knowledge concerning teaching relational expertise (LaVoi, 2007a).

Interpersonal perspective. To explain the meaning of the results solely from a behavioral perspective (e.g., coaching behaviors) and their association with the motivational climate would reveal only a portion of the findings. The unique aspect of relationship research in sport is that the interaction between both members of the dyad is taken into consideration. In the case of this study, the athletes' direct perspective of the coach-athlete relationship was measured; therefore, the findings are discussed in regard to athlete implications also.

This study bolsters the theoretical notion that closeness was a strong indicator of coach-athlete relationship quality. Furthermore, there was evidence that when closeness exists between the members of the dyad athletes view the environment to be more mastery-oriented. However, an important question to consider would be how close the relationship should be in order to create an optimal motivational climate. In general, elite athletes (e.g., Division I NCAA athletes) tended to be high in both task and ego orientation; concomitantly, the climate in which they train should also have aspects of both an ego and mastery focus (Pensgaard & Roberts, 2002). In support of the postulates made by the AGT (e.g., either a mastery or ego climate will be more salient, however both will exist), the present findings suggested that when there are moderately positive levels of closeness, the environment will be more mastery-focused, although aspects of an ego orientation will still be present. What the present findings did not reveal were the repercussions of having extreme levels of closeness within the coach-athlete relationship.

Relationship sport scientists qualitatively investigated several dyads that could have possessed levels of closeness that reach the extreme end of the spectrum (e.g., husband/coach – wife/athlete, parent/coach – child/athlete) (Jowett & Meek, 2000; Jowett & Timson-Katchis, 2005). In terms of coach-athlete relationships in married couples, love, care, trust, and consequent high levels of closeness characterized the relationship. The high level of closeness was viewed as positive and led to pleasant sport environments. The investigations (Jowett & Timson-Katchis, 2005) centered on parent-child athletic partnerships revealed that, in certain situations, the level of closeness could be complicating, and in some cases detrimental. In the parent/coach – child/athlete situation, the researchers reported that adolescents needed to be more dependent on their

coach, while simultaneously independent from their parents. This conflict could cause sport and familial relationship confusion. These two examples are unique, yet they provide insight into potential drawbacks of overly close relationships. If a coach was forced to cut or demote (e.g., bench) a player with whom they are “extremely” close, increased levels of dissonance could occur for both members. Further, if youth sport coach-athlete dyads possess similar levels of closeness, as described by Jowett and Meek (2000) in their investigation of marital relationships, strict coach-athlete boundaries could be compromised. Future research to better understand the conceptualization, antecedents, and consequences of closeness within coach-athlete relationships should investigate how close is too close, and if an optimal level of closeness exists.

Commitment between the coach and the athlete has been associated with relationships that are in agreement rather than discord. Jowett and Carpenter (2004) revealed that commitment within the coach athlete dyad produced interactions defined by fulfilling roles (e.g., preparation, assistance, patience) and putting forth effort (e.g., being on time, working hard, being focused). The present findings supported these postulates in that committed coach-athlete relationships are associated with training climates focused on effort, hard work, and team camaraderie. The majority of studies investigating commitment within the coach-athlete relationship have found high levels did exist, especially in those that sampled elite-level athletes that competed at either Olympic or professional levels. It would be safe to assume that these athletes also had high levels of commitment to their sport. Hodge and colleagues (2008) found that athletes who were high in social motivation (e.g., desire for social connections) in combination with both a high task- and ego-achievement orientation, were more likely to

have high levels of sport commitment. Future research in this area should consider analyzing how commitment within the coach-athlete relationship parallels sport commitment, and if one has an influence on the other.

The moderately high levels of relationship commitment within this study could be a result of the athletes' elite status, and the necessity for commitment to their sport in order to compete at the collegiate level. Conversely, in this study commitment received the lowest ratings out of the 3 C's. Similarly, in a more recent sport relationship investigation, LaVoi (2007a) noted that commitment was rarely mentioned when athletes were asked to describe close coach-athlete relationships. This finding may be a result of athletes knowing that their competitive collegiate career, and coach-athlete relationship, was a terminal one (e.g., after four years they would be forced to move on). Therefore, their desire to continue participation and interaction with their coach could be clouded by this notion. Transitions out of sport remained an understudied topic that warrants further attention, and approaching the topic through the coach-athlete relationship could be a valuable and productive line of research.

Another important cognitive component of the coach-athlete relationship associated with commitment was the desire to have common goals that were clearly set and communicated. Relationship scientists have discovered that when the coach and athlete disagreed about the goal structure of the environment, relationship tension was experienced daily (Jowett, 2003). Because of the inability of the GrCART-Q, the present study could not capture if and how coaches and athletes established process, performance, or outcome goals. However, the moderate levels of commitment reported within this sample can be described through our past understanding of the dispositional

goals of elite athletes. As stated above, elite athletes tend to have a high task and ego achievement motivation (Pensgaard & Roberts, 2002). Because the athletes perceived the motivational climate, as created by the coach, to be highly mastery-involved and moderately ego-involved, it could be inferred that there was a common ground in terms of goal structure, increasing the likelihood of committed coach-athlete relations.

This study found that moderately high levels of complementarity were positively associated with a mastery-oriented motivational climate and negatively associated with an ego-oriented motivational climate. These findings supported past research indicating that coaches who emphasize task-oriented motivational climates engage in behaviors (positive reinforcement, encouragement, technical instruction) that will be more likely to produce high levels of complementarity. More importantly, complementarity could only exist if the athlete adopts a behavioral approach that was congenial, responsive, and task-oriented. For example, items 10 (e.g., “when I am coached by my coach, I am concerned / interested”) and 11 (e.g., “when I am coached by my coach, I am ready to do my best”) referred to the behavioral components of the athlete. If an athlete has a different set of achievement motives than the coach, low levels of complementarity would exist. For example, for a youth-sport athlete who has specialized from young age and reached a level of expertise, he/she will be bored if solely coached from a mastery perspective with the absence of competition. Future research examining the behavioral processes (e.g., complementarity) of the coach-athlete relationship and achievement motivation is needed considering how influential achievement goals (e.g., task and ego) are in determining achievement related behaviors (Harter, 1978).

Gender and the Coach-athlete Relationship. The hypotheses concerning the gender differences within the coach-athlete relationship was based on the tenets of Berscheid and colleagues (1989), as well as an understanding of gender differences in the socialization of sport and exercise psychology (Deboer, 2004). This study found no statistical gender differences related to athlete perceptions of the coach-athlete relationship as defined by the 3 C's. There is little sport-related evidence to directly compare these findings. LaVoi (2007a) found that female athletes reported more developed levels of closeness within the coach-athlete relationship. Despite her significant findings, Lavoï (2007a) contended it should not be assumed that males value closeness less than females, but rather they may be socialized to conceptualize closeness in a different way. Another gender sensitive study was conducted by Jowett and Clark-Carter (2006), who were interested in how gender impacted the accuracy of coaches in rating the other dyad members' perceptions of the relationship (e.g., assumed similarity). The authors reported that no gender difference existed within the athlete sample. However, there was a gender difference among coaches related to their assumed similarity for commitment. Specifically, coaches of female athletes were more accurate at assessing levels of commitment between the dyad than coaches with male athletes.

There were no statistical differences between athlete perceptions of closeness, commitment, and complementarity as a result of coach gender in this study. However, past research has concluded that gender differences could exist within the coach-athlete relationship. For example, Black and Weiss (1992), Richardson and Tandy (1986), and Weiss, Bredemeir and Shewchuk (1985) have shown that athlete gender influences coaching behaviors. Specifically, Tomlinson (1997) investigated the power distribution

within different types of coach-athlete dyads, finding that coaches of female athletes tended to adopt a more controlling coaching style. Currently, little is understood in regard to how gender exclusively impacts the coach-athlete relationship, making it essential for future research investigating the coach-athlete relationship to focus on differences between both athlete and coach gender.

Relationship research outside of sport has prioritized gender as a dependent variable when investigating this phenomenon. Researchers have found that within romantic relationships females tend to have higher levels of commitment (Adams & Warren, 1999). From an organizational perspective, males reported higher levels of complementarity with their dormitory roommates (Ansell, Kurtz, & Markey, 2008). Further, females tended to report higher levels of closeness within either friendships or romantic relationships (Berscheid et al., 1989). Now that sport psychology has shifted its attention from leadership research to a more interpersonal approach, the role of gender in the formation of high quality coach-athlete relationships within team sports must be understood. For example, studies investigating how and why different gender combinations operate (e.g., male – male, male – female, female – male, female – female) could impact the coach-athlete relationship, and why such variations could potentially exist.

Conclusion: Implications, limitations, and future directions

Implications. In summary, these findings are important on both empirical and practical grounds. From a theoretical perspective, it was concluded that better quality relationships were associated with mastery-involving climates, adding to the predictive validity of the 3 C's Model. From a practical standpoint these findings addressed an

important question that Smith and colleagues (2005) contend was an integral avenue of research, specifically “how can a task involving climate be fostered on sport teams?” These findings have only begun to answer this question, although several possibilities could be formulated.

In terms of closeness, this study indicated that if coaches engaged in coaching behaviors associated with creating a mastery-oriented climate, they would be more likely to demonstrate respect, care, like, and appreciation for their athletes. Concurrently, athletes would be more likely to feel valued and in turn have more positive affective reactions toward their coach. In regard to commitment, coaches should understand how their athletes are motivated in certain types of achievement domains. This would lead to a clearer understanding of what type of goal structure was required for the beneficial sport environment. Also, coaches and athletes should maintain open lines of communication to increase commitment. Effective communication within the dyad would not only increase the likelihood that both members understand their roles and expectations, but would also fulfill their motivation to maintain relationships over time (Vos Strache, 1979). Lastly, coach-athlete relationships that were in agreement and high in complementarity were characterized by coaches who have control, are dominant, and decisive; simultaneously the coach and the athlete maintained a friendly and responsive demeanor. If both members of the dyad were focused on skill and personal improvement, and the coach was invested to create a mastery-involved motivational climate, then higher levels of complementarity would exist.

Limitations. Due to the limitations of this study it was difficult to draw firm conclusions concerning the nature of the coach-athlete relationship. First, the GrCART-

Q may not be the most effective instrument for measuring coach-athlete relationships within western cultures, and future research should consider either using a hybrid of the GrCART-Q and CART-Q, or exclusively focus on enhancing psychometric assessment of the GrCART-Q. Second, the role an athlete has on the team (e.g., starter, reserve) may impact his/her relationship with the coach; therefore, future research should include this, and other more comprehensive demographic variables, in appropriate analyses. Third, another variable that was not included, decreasing the effectiveness of interpretation, was the dispositional goal orientations of the athlete. Standage, Duda, and Ntoumanis (2003) purported that it is necessary to study both dispositional goal orientations and perceptions of the motivational climate when investigating indices of motivation. As a result of these limitations certain analyses that could have provided valuable information had to be abandoned (e.g., individual vs. team sports, years of experience under particular coach). A further limitation of this study was the small and narrow demographic profile of the sample. For example, the majority of participants were Caucasian in Phase I and II, which decreased the external validity of the results to other ethnic groups that compose the American collegiate population. The size and demographics of the sample selected for coach-athlete relationship investigation is crucial to drive the conceptual knowledge base within this area (Jowett, 2007). Lastly, more powerful statistics (e.g., Multivariate analysis of variance) should have been employed when testing for group differences (e.g., gender differences).

The primary strength of the present study was the novelty of associations studied, specifically between the coach athlete-relationship and indices of motivation.

Furthermore, this study showed that the GrCART-Q was not the most appropriate scale

for athletes outside of the culture in which it was developed. Lastly, the recognition that the affective, behavioral, and cognitive dimensions of the coach-athlete relationship, as defined by the 3 C's model, were interrelated, dynamic, and complex should encourage future researchers to engage in more informed research design.

Future directions. Areas of future research have been suggested throughout the discussion, although several extensions to this study must be highlighted. First, there are certain methodological conundrums inherent within the version of the GrCART-Q used. These challenges are not unique to relationship research employing the quantitative instruments (e.g., CART-Q, GrCART-Q) that measure the constructs of the 3 C's model (Jowett, 2006; Jowett & Ntoumanis, 2004). The scholars responsible for the development of the CART-Q and GrCART-Q, as well as other sport relationship scientists, have called for future research to be focused on the psychometric properties of the CART-Q and GrCART-Q. Specifically, future research should be concerned with developing a modified version of the scales that capture a more in-depth view of the coach-athlete relationship, as well as both global and cultural sensitive aspects of the coach-athlete dyad. In terms of gender, future research is needed to understand if both genders conceptualize the constructs that operationally define the coach-athlete relationship in similar or different ways. Finally, when leaders adopt a more relationship-oriented approach, the performance of the team increased (Danielson, 1976). Consequently, future research is needed to understand what specific affective, cognitive, and behavioral aspects are required by both the coach and athlete (e.g., trust, appreciation, commitment, effective communication, clear expectations) in order to create high quality coach-athlete relationships.

In conclusion, the coach-athlete relationship is a complex, dynamic, and multifaceted interpersonal phenomenon that requires research driven by solid methodology and appropriate conceptual frameworks (Poczwardowski et al., 2006). The relationship formed between the coach and athlete is sensitive to a wide variety of environmental, cultural, and intrapersonal features. These elements are important to address when investigating the antecedents and consequents of the coach-athlete dyad. A multitude of research trajectories are unexplored, although the emerging interpersonal researchers, within sport psychology, are making concerted efforts to clarify the inherent intricacies of the coach-athlete relationship. Finally, replicating, extending, and challenging past research is necessary in order to produce a more coherent and clear understanding of how the coach-athlete dyad is related to the psycho-social outcomes of both members.

APPENDICES

APPENDIX A

Background Information

1. How old are you? _____

2. What is your gender? Male Female

3. What is your ethnic background (circle one):

White Caucasian African-American Hispanic Asian Native American Other

4. Do you currently or have you ever competed in a coached sport that had a season of three months or longer? Yes No

If you answered yes to number four, please continue filling out the questionnaire thinking of a specific coach of a team that you played on for at least one season lasting three months or longer. If you answer **no to question number four please do not continue with the questionnaire.*

5. What sport did you play? (Please print the sport) _____

6. How long did you play for this coach? _____

7. How long ago did you play for this coach? _____

8. What is the gender of the coach? _____

9. Are you currently playing for the same coach? Yes No

APPENDIX B

The Coach-Athlete relationship Questionnaire (Jowett & Ntoumanis, 2003)

Instructions:

- Please read each of the following statements listed below and indicate how much you personally agree with each statement by circling the appropriate number indicated below.
- **Answer the questions below with the coach you specified on the first page in mind.**
- If you make a mistake, please put a cross through the circle and change your answer.
- There are no right or wrong answers, so please answer all questions truthfully.
- If you have questions, please ask for help.

1 =Strongly Disagree 2 =Moderately Disagree 3 =Disagree 4 =Neutral 5 =Agree

6 =Moderately Agree

7 =Strongly Agree

1. I like my coach.

1 2 3 4 5 6 7

2. I trust my coach.

1 2 3 4 5 6 7

3. I respect my coach.

1 2 3 4 5 6 7

4. I feel that the training I received under my coach is gratifying and satisfying.

1 2 3 4 5 6 7

5. I appreciate my coach's sacrifices in order to improve my performance.

1 2 3 4 5 6 7

6. I cooperate well with my coach so that our goals are achieved.

1 2 3 4 5 6 7

7. I communicate well with my coach.

1 2 3 4 5 6 7

8. I identify with / understand my coach.

1 2 3 4 5 6 7

9. When I am coached by my coach, I feel capable.

1 2 3 4 5 6 7

10. When I am coached by my coach, I am concerned / interested.

1 2 3 4 5 6 7

11. When I am coached by my coach, I am ready to do my best.

1 2 3 4 5 6 7

12. When I am coached by my coach, I am supported / understood.

1 2 3 4 5 6 7

APPENDIX C

The Investment Model Scale (Rusbult et al., 1998)

Instructions:

- Please indicate the degree to which you agree with each of the following statements regarding the coach-athlete relationship you specified in the beginning of the questionnaire.

0	1	2	3	4	5	6	7	8
Do Not Agree			Agree			Completely		
At All			Somewhat			Agree		

1. I want our relationship to last for a very long time.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

2. I am committed to maintaining my relationship with my coach.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

3. I would not feel very upset if our relationship were to end in the near future.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

4. I feel very attached to our relationship – very strongly linked to my coach.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

5. I want our coach-athlete relationship to last forever.

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

6. I am oriented toward the long-term future of my relationship (e.g., I imagine being in a coach-athlete relationship with this person several years from now).

1	2	3	4	5	6	7	8
---	---	---	---	---	---	---	---

APPENDIX D

Relationship Frequency and Strength Scale (Berscheid et al., 1989)

Instructions:

Please answer the following questions with regard to the coach you have specified in the beginning of this questionnaire. First we would like you to estimate the amount of time you typically spend / spent alone with your coach. Please estimate the time by breaking the day into morning, afternoon, and evening. Think back to a week which was characteristic to a normal week in your relationship and write in the average amount of time per day that you spent alone with you coach, during each time period (e.g. morning, afternoon, evening). If you did not spend any time with your coach alone write 0 hours 0 minutes.

1. DURING AN AVERAGE WEEK, what is the average amount of time, per day, that you spent alone with your coach in the morning (e.g., between the time you woke up and 12 noon).

_____ hour(s) _____ minutes

2. DURING AN AVERAGE WEEK, what is the average amount of time, per day, that you spent alone with your coach in the afternoon (e.g., 12 noon and 6pm).

_____ hour(s) _____ minutes

3. DURING AN AVERAGE WEEK, what is the average amount of time, per day, that you spent alone with your coach in the evening (e.g., between 6pm and bedtime).

_____ hour(s) _____ minutes

The following questions concern the amount of influence your coach has / had on your thoughts, feelings, and behavior. Using the 7-point scale below please indicate the extent to which you agree or disagree by circling the appropriate number.

1 = Strongly Disagree 2=Moderately Disagree 3=Disagree 4=Neutral 5=Agree

6=Moderately Agree 7=Strongly Agree

1. Coach will influence my future financial security.

1 2 3 4 5 6 7

2. Coach does not influence every day things in my life.

1 2 3 4 5 6 7

3. Coach influences important things in my life.

1 2 3 4 5 6 7

4. Coach influences which parties and other social events I attend.

1 2 3 4 5 6 7

5. Coach influences the extent to which I accept responsibilities in our relationship.

1 2 3 4 5 6 7

6. Coach does not influence how much time I spend doing house hold work.

1 2 3 4 5 6 7

7. Coach does not influence how I choose to spend my money.

1 2 3 4 5 6 7

8. Coach influences the way I feel about myself.

1 2 3 4 5 6 7

9. Coach does not influence my moods.

1 2 3 4 5 6 7

10. Coach influences the basic values that I hold.

1 2 3 4 5 6 7

11. Coach does not influence the opinions that I have of other important people in my life.

1 2 3 4 5 6 7

12. Coach does not influence when I see, and the amount of time I spend with, my family.

1 2 3 4 5 6 7

13. Coach influences when I see, and the amount of time I spend with, my friends.

1 2 3 4 5 6 7

14. Coach does not influence which of my friends I see.

1 2 3 4 5 6 7

15. Coach does not influence the type of career I have.

1 2 3 4 5 6 7

16. Coach influences or will influence how much time I devote to my career.

1 2 3 4 5 6 7

17. Coach does not influence my chances of getting a good job in the future.

1 2 3 4 5 6 7

18. Coach influences the way I feel about the future.

1 2 3 4 5 6 7

19. Coach does not have the capacity to influence how I act in various situations.

1 2 3 4 5 6 7

20. Coach influences and contributes to my overall happiness.

1 2 3 4 5 6 7

21. Coach does not influence my present financial security.

1 2 3 4 5 6 7

22. Coach influences how I spend my free time.

1 2 3 4 5 6 7

23. Coach influences when I see coach and the amount of time the two of us spend together

1 2 3 4 5 6 7

24. Coach does not influence how I dress.

1 2 3 4 5 6 7

25. Coach influences how I decorate my home (e.g., dorm, apartment, house).

1 2 3 4 5 6 7

26. Coach does not influence where I live.

1 2 3 4 5 6 7

27. Coach influences what I watch on TV.

1 2 3 4 5 6 7

APPENDIX E

The Sport Interpersonal Relationship Questionnaire (Wylleman, 1995)

Instructions:

- The following statements describe typical behavior that could be displayed by a coach.
- **Please indicate your agreement or disagreement with the statements regarding the type of coach you have / had.**

1 = Disagree 2 = Moderately Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

1. During training sessions, we, the athletes, can do what we want to do.

1 2 3 4 5

2. The coach finds it very hard to refuse me something.

1 2 3 4 5

3. The coach easily gives in.

1 2 3 4 5

4. The coach finds it difficult to refuse something.

1 2 3 4 5

5. The coach easily forgives me for not paying attention.

1 2 3 4 5

6. The coach is very competent.

1 2 3 4 5

7. The coach can be very mad at me.

1 2 3 4 5

8. The coach stimulates me to train.

1 2 3 4 5

APPENDIX F

MICHIGAN STATE
UNIVERSITY

**Initial IRB
Application
Determination
*Exempt***

February 7, 2008

To: Martha E. EWING
138 IM Sports Circle
MSU

Re: IRB# X08-036 Category: EXEMPT 1-2
Approval Date: February 7, 2008

Title: The relationship between the quality of the coach-athlete relationship and perceptions of the motivational climate.

The Institutional Review Board has completed their review of your project. I am pleased to advise you that your project has been deemed as exempt in accordance with federal regulations.

The IRB has found that your research project meets the criteria for exempt status and the criteria for the protection of human subjects in exempt research. Under our exempt policy the Principal Investigator assumes the responsibilities for the protection of human subjects in this project as outlined in the assurance letter and exempt educational material. The IRB office has received your signed assurance for exempt research. A copy of this signed agreement is appended for your information and records.

Renewals: Exempt protocols do not need to be renewed. If the project is completed, please submit an *Application for Permanent Closure*.

Revisions: Exempt protocols do not require revisions. However, if changes are made to a protocol that may no longer meet the exempt criteria, a new initial application will be required.

Problems: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events, or any problem that may increase the risk to the human subjects and change the category of review, notify the IRB office promptly. Any complaints from participants regarding the risk and benefits of the project must be reported to the IRB.

Follow-up: If your exempt project is not completed and closed after three years, the IRB office will contact you regarding the status of the project and to verify that no changes have occurred that may affect exempt status.

Please use the IRB number listed above on any forms submitted which relate to this project, or on any correspondence with the IRB office.

Good luck in your research. If we can be of further assistance, please contact us at 517-355-2180 or via email at IRB@msu.edu. Thank you for your cooperation.

Sincerely,



Peter Vasilenko, Ph.D.
BIRB Chair

c: Jonathan Burg
Michigan State University
IM Circle, RM 1
East Lansing, MI 48823

APPENDIX G

The Relationship between the Quality of the Coach-athlete Relationship and Perceptions
of the Motivational Climate
Informed Consent Form
Michigan State University
Department of Kinesiology

You are being asked to participate in a study being conducted by Jonathan Michael Burg, a Master's student, under the supervision of Dr. Martha Ewing from Michigan State University. The purpose of the study is to investigate the association between perceptions of the motivational climate and the quality of the relationship between athletes and coaches.

Your participation will take approximately 15-20 minutes.

There are no known risks associated with participation in this study. You will not benefit from your participation in this study. Your participation in this study may contribute valuable information to coaches and athletes concerning the possible effects of the quality of the coach-athlete relationship.

Your responses to the survey will remain confidential; no one except the primary investigators will have access to these responses. Results will be based on the answers given by all participants as a group insuring confidentiality of individual responses. Group-based findings will be made available to those who are interested. Your privacy will be protected to the maximum extent allowable by law.

Investigators will take measures to ensure the confidentiality of the participants. We ask that you not put your names on questionnaires or surveys. Participation will be voluntary and you may withdraw from participation at any time without penalty. Furthermore, you may refuse to answer specific questions on the questionnaire and/or surveys that you feel uncomfortable answering and can still be a part of the study.

Your participation in this study would be greatly appreciated. If you have any questions concerning your participation in this study, please contact the principal investigator, Dr. Martha Ewing at (517) 353-4652 or mewing@msu.edu or Jonathan Michael Burg at (860) 248-5754 or burgiona@msu.edu.

If you have any questions about your role and rights as a research participant, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Director of MSU's Human Research Protection Programs, Dr. Peter Vasilenko, at 517-355-2180, FAX 517-432-4503, or e-mail irb@msu.edu, or regular mail at: 202 Olds Hall, MSU, East Lansing, MI 48824.

Thank you for your time and cooperation.

Your signature below indicates your voluntary agreement to participate in this study, The Relationship between Perceptions of the Coach-athlete Relationship and the Motivational Climate.

Print Name

Participant Signature

Date

APPENDIX H

Background Information

10. How old are you? _____

11. What is your gender? Male Female

12. What is your ethnic background (circle one):

White Caucasian African-American Hispanic Asian Native American Other

13. What sport do you play? (Please print the sport)

14. How long have you played for your current coach?

15. What is the gender of your coach?

APPENDIX I

Perceived Motivational Sport Climate Questionnaire – 2 (Newton & Duda, 1998)

Instructions:

- The following statements describe a typical atmosphere on a team, in a classroom, or within coach-athlete training environment. Please indicate the type of atmosphere that best matches the team or performance environment created by the coach you indicated above.

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

9. The coach wants us to try new skills.

1 2 3 4 5

10. The coach gets mad when a player makes a mistake.

1 2 3 4 5

11. The coach gives most of his or her attention to the stars.

1 2 3 4 5

12. Each player contributes in some important way.

1 2 3 4 5

13. The coach believes that all of us are crucial to the success of the team.

1 2 3 4 5

14. The coach praises players only when they outplay team mates.

1 2 3 4 5

15. The coach thinks that only the starters contribute to the success of the team

1 2 3 4 5

16. Players feel good when they try their best.

1 2 3 4 5

17. Players are taken out of the game for mistakes.

1 2 3 4 5

18. Players at all skill levels have an important role on the team.

1 2 3 4 5

19. Players help each other learn.

1 2 3 4 5

20. Players are encouraged to outplay the other players.

1 2 3 4 5

21. The coach has his or her own favorites

1 2 3 4 5

22. The coach makes sure players improve on skills they're not good at.

1 2 3 4 5

23. The coach yells at players for messing up.

1 2 3 4 5

24. Players feel successful when they improve.

1 2 3 4 5

25. Only the players with the best "stats" get praised.

1 2 3 4 5

26. Players are punished when they make a mistake.

1 2 3 4 5

27. On this team, each player has an important role.

1 2 3 4 5

28. Trying hard is rewarded.

1 2 3 4 5

29. The coach encourages players to help each other.

1 2 3 4 5

30. The coach makes it clear who he or she thinks are the best players.

1 2 3 4 5

31. Players are “psyched when they do better than their team mates in a game.

1 2 3 4 5

32. If you want to play in a game you must be one of the best players.

1 2 3 4 5

33. The coach emphasizes always trying your best.

1 2 3 4 5

34. Only the top players “get noticed by the coach.

1 2 3 4 5

35. Players are afraid to make mistakes.

1 2 3 4 5

36. Players are encouraged to work on their weaknesses.

1 2 3 4 5

37. The coach favors some players more than others.

1 2 3 4 5

38. The focus is to improve each game/practice.

1 2 3 4 5

39. The players really “work together” as a team.

1 2 3 4 5

40. Each player feels as if they are an important team member.

1 2 3 4 5

41. The players help each other to get better and excel.

1 2 3 4 5

APPENDIX J

Coaches Informational Letter

Dear Coach:

My name is Jonathan Burg, a graduate student in kinesiology, specializing in sport psychology at Michigan State University. I am conducting a study investigating the association between the coach-athlete relationship and perceptions of the motivational climate. The specific aim of the study is to identify how athletes' perceive the relationships with their coach and how this in turn effects their perceptions of the motivational climate. This study could have practical implications for coaches and players to ensure that the most effective coach-athlete relationships are formed

I would like to invite your team to participate in the investigation. The study will involve the athletes on your team completing a questionnaire which will take 10-15 minutes. We will schedule a time that is convenient for the team. The questionnaire will measure the athletes' direct perspective of the coach-athlete relationship and perceptions of the motivational climate. Participation in the study is completely voluntary and all information collected will be completely confidential.

The participation of your athletes in this study will be greatly appreciated. If you have any questions concerning the study please contact myself, Jonathan Burg, or Dr. Martha Ewing. Thank you and I will be in contact with you soon.

Sincerely,

Jonathan Burg
860 – 248 – 5754
Burgjona@msu.edu

Dr. Martha Ewing
Institute of Youth Sport
Michigan State University
mewing@msu.edu

APPENDIX K

Correlation Matrix for the GrCART-Q												
	Close. 1	Close. 2	Close. 3	Close. 4	Comm. 5	Comm. 6	Comm. 7	Comm. 8	Comp. 9	Comp. 10	Comp. 11	Comp. 12
Close. 1	1.000	.886**	.874**	.747**	.717**	.760**	.713**	.811**	.782**	.698**	.621**	.800**
Close. 2	.886**	1.000	.844**	.739**	.750**	.710**	.646**	.752**	.752**	.679**	.640**	.793**
Close. 3	.874**	.844**	1.000	.767**	.742**	.744**	.641**	.731**	.783**	.686**	.618**	.762**
Close. 4	.747**	.739**	.767**	1.000	.728**	.652**	.525**	.674**	.691**	.673**	.577**	.657**
Comm. 5	.717**	.750**	.742**	.728**	1.000	.730**	.594**	.688**	.707**	.644**	.523**	.677**
Comm. 6	.760**	.710**	.744**	.652**	.730**	1.000	.800**	.745**	.727**	.695**	.632**	.724**
Comm. 7	.713**	.646**	.641**	.525**	.594**	.800**	1.000	.795**	.673**	.584**	.565**	.708**
Comm. 8	.811**	.752**	.731**	.674**	.688**	.745**	.795**	1.000	.748**	.640**	.621**	.829**
Comp. 9	.782**	.752**	.783**	.691**	.707**	.727**	.673**	.748**	1.000	.718**	.701**	.801**
Comp. 10	.698**	.679**	.686**	.673**	.644**	.695**	.584**	.640**	.718**	1.000	.669**	.639**
Comp. 11	.621**	.640**	.618**	.577**	.523**	.632**	.565**	.621**	.701**	.669**	1.000	.713**
Comp. 12	.800**	.793**	.762**	.657**	.677**	.724**	.708**	.829**	.801**	.639**	.713**	1.000

** Correlations significant at the .001 level

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