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A Functional Model of Team Leadership for Sport

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THE FLORIDA STATE UNIVERSITY
COLLEGE OF EDUCATION

A FUNCTIONAL MODEL OF TEAM LEADERSHIP FOR SPORT

By

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To my beloved wife Rachel, with love and appreciation. And to my two sons, Jackson and
Everett, whom I love more than life itself.

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ABSTRACT

The purpose of this study was to provide a new framework of team leadership in sport. More specifically, the aim was to examine a functional leadership paradigm in sport where full range of leadership behaviors by the coach and by the collective athletes influence team cohesion, and thereby increase the likelihood of team goal achievement. Data were utilized from 518 NCAA Division I-III athletes from 36 softball teams and 13 baseball teams. The participants completed the Multifactor Leadership Questionnaire (Avolio & Bass, 2004), the Team Multifactor Leadership Questionnaire (Avolio & Bass, 1996), the Group Environment Questionnaire (Carron, Brawley, & Widmeyer, 1985), and the Team Outcome Questionnaire that was created for this study. Structural equation modeling was used to assess the relationships among the variables in the model. The results indicated that the original hypothesized model did not fit the data, but an acceptable alternative model was found which included transformational leadership and two transactional leadership variables as three separate leadership styles influencing perceptions of cohesion. It was discovered that transformational leadership had a significant positive effect on cohesion, which in turn appeared to have a significant positive effect on goal achievement. The author discusses a potentially fruitful direction in the examination of team leadership, within which the first step would involve a closer examination of measurement of coach leadership, team leadership, and cohesion.

CHAPTER 1

INTRODUCTION

Whether it is the president of the United States, the CEO of a Fortune 500 company, or the head coach of a professional football team, there is an expectation of effective leadership. Curiosity about what makes these leaders effective (or ineffective), how they are developed, and what measures should be taken in order to select them, has led to a vast amount of research. Numerous theories based on leader traits, behaviors, skills, and related contingencies have been developed in the fields of Industrial and Organizational (I/O) psychology and management. In the sport domain a variety of conceptualizations have been proposed which borrow ideas from these fields. The Multidimensional Model of Leadership (MML; Chelladurai, 1978) has provided insight on how leaders must consider the situation and athlete preferences when coaching. Smoll and Smith (1989) offered a framework in the Mediational Model of Leadership that helps describe athletes' evaluative reactions to coaching behaviors. Finally, the Coaching Model (Cote, Salmela, Trudel, Baria, & Russell, 1995) helps describe coaches' mental models for developing athletes.

These models have given significant insight into the construct of leadership. Nonetheless, shortcomings remain. First, and perhaps most integral, is the lack of a consistent definition of "leadership" in sport. This problem has been identified in other domains as well (Barker, 1997). Few journal articles on leadership in sport offer a definition of "leadership" at all, and the term is often confused with "coaching." It is proposed herein that sport researchers may utilize a functional definition of leadership that explains the leader's job as providing *anything* that is needed for group maintenance and task accomplishment (Hackman & Walton, 1986).

A second shortcoming in the sport leadership literature is that leadership style in sport has become synonymous with autocratic versus democratic behaviors. Chelladurai's (1978) MML and Leadership Scale for Sport (LSS) made an important contribution to the sport psychology and sport management literature. Martens (1990) seminal text on successful coaching discusses in detail coaches' participative style. Many have utilized the LSS in order to describe leadership style and explain leader behavior. It seems though, that this preoccupation with autocratic/democratic style has led to less attention to alternative explanations of leader behavior. For instance, Bass's (1985) popular concept of "transformational leadership," and the Full Range of Leadership Model has only recently spread to the sport domain (e.g., Charbonneau, Barling, & Kelloway, 2001; Kent & Chelladurai, 2001; Rowold, 2006). The transformational leader motivates and empowers his/her followers to perform beyond expectations through charisma, individual consideration, and intellectual stimulation. Interestingly, transformational leadership style is proposed to be either directive or participative depending on the leader (Bass & Riggio, 2006).

The last two shortcomings of the sport leadership literature are both related to the level of analysis in which sport leadership has been examined. The first of these is that researchers have focused mostly on the leader's effect on individual athletes rather than his/her relationship with teams. Though the authors of the above sport leadership models may implicitly propose that effective leadership will lead to increased *team* performance, they mainly focus on a leader's influence on the *individual* athlete. For instance, the cognitive behavioral Mediational Model (Smoll & Smith, 1989) proposes that coaches must understand how an athlete will respond to their behaviors. In the case of the coaching model, the leader's focus is on player development. The majority of literature on the Multidimensional Model of Leadership supports the notion that

leaders affect member satisfaction, but there is no specific prediction of a leader's effect on team processes. The last shortcoming is the comparative lack of examination of leadership of athletes on teams compared to that of coaches or managers. Research on peer leadership in sport has recently garnered more interest, but as asserted by Loughhead, Hardy, and Eys (2006), it has mostly been descriptive in nature. It would seem further research must be conducted examining how peer leadership affects team processes.

In regard to these shortcomings it is proposed that a new framework of team leadership in sport be considered using a functional definition of leadership. Zaccaro, Rittman, and Marks (2001) proposed a functional leadership model for performance teams. Using this as a foundation, Figure 1.1 presents a model of team leadership for sport. The left-most column is *leader functions*, which represent social problem solving. Leadership conceptualized in this model is available to all members of the team including the coaches and athletes. It is predicted these functions will have an effect on team processes, depicted in the center of the model. These processes act as determinants for team effectiveness defined as the extent to which the team meets its goals, and how well the group is maintained. Finally, processes are expected to influence team performance dependent upon situational contingencies. The current study takes a step towards the operationalization of this model.

Purpose of the Current Study

With acknowledgment that the operationalization of an entire model of this magnitude is difficult, a smaller segment of it was examined. Mumford, Zaccaro, Harding, Jacobs, and Fleishman (2000) indicated that even the most well developed leader plans are useless if they are inadequately implemented. Considering this, the leader function of “managing personnel resources” from Zaccaro et al. (2001) was used as the critical leadership input for the model.

This function represents the implementation of plans in the social problem solving process. The purpose of this study was to provide a new framework of team leadership in sport. More specifically, the aim was to examine a functional leadership paradigm in sport where the full range of leadership behaviors by the coach and by the collective athletes influences team cohesion, which increases the likelihood of team goal achievement. The model associated with this purpose is depicted in Figure 1.2.

Figure 1.1. A Team Leadership Model for Sport (Adapted from Zaccaro, S. J., Rittman, A. L. & Marks, M. A. (2001). Team Leadership. *The Leadership Quarterly*, 12, 451-483).

To describe the “managing personnel resources” function, Bass and Riggio’s (2006) Full Range of Leadership Model was used. In their model, leadership style consists of transformational factors of *Idealized Influence*, *Interpersonal Motivation*, *Intellectual Stimulation*, and *Individualized Consideration*; the transactional factors of *Contingent Reward*, and *management by exception (active and passive)*; absence of leadership is termed *Laissez-Faire Leadership*. According to Bass (1985), a transformational leader raises the level of awareness about the importance of goals, and encourages subordinates to transcend self-interest in order to motivate people to perform beyond expectations. Transactional leadership differs from this style in that it is the exchange of rewards or punishment between the leader and follower; dependent upon performance or outcomes. Transformational leadership behavior has been previously indicated by the component of *Managing Personnel Resources* (Burke, Stagl, Klein, Goodwin, Salas, & Halpin, 2006).

Team Cohesion represents the team process in this model. *Cohesion* is also one of the constructs specifically identified by Zaccaro et al. (2001) as a motivational team processes. Cohesion, defined by Carron, Brawley, and Widmeyer (1998) as a group’s tendency to “stick together” in the process of goal accomplishment and group maintenance, has been found to have a significant relationship with LSS leader behaviors (Westre & Weis, 1991; Shields, Gardner, Bredemeier, & Bostro, 1997). More recently, there is evidence that coaches’ transformational leadership (Callow, Smith, Hardy, Arthur, & Hardy, 2009) and athlete peer leadership (Price & Weis, 2011) have positive effects on cohesion.

The final component of the proposed model is team effectiveness, represented herein as *team goal accomplishment*. Accomplishing goals is a crucial component considering the functional definition of leadership, which proposes that the leader’s critical job is to provide

whatever is needed in order to achieve positive group outcomes. This infers that a leader is effective if the collective goals of the team are met and the group is well maintained. Though Brawley, Carron, and Widmeyer (1992) found that athletes and coaches fail to set specific measurable goals, it is expected that a transformational leader's vision and clarification of goals would have an effect on this process.

Finally, both athlete and coach leadership were considered with this study. Though much of the focus on leadership has been on coach behavior, Loughhead et al. (2006) found that athletes have task, social, and external leader functions as well. Todd and Kent (2004) asserted that coaches believe athlete leadership is important to the success of a team, and found evidence that athletes prefer peer leaders who work hard and show respect to teammates. There is also increasing belief that the concept of shared leadership should be examined more often in group and team settings (Peirce & Conger, 2002). Shared Leadership occurs when leadership responsibility is distributed evenly through a team rather than only from a hierarchy (e.g., Coach to athlete). Given this, a complete model of team leadership in sport must consider the leadership by athletes as well as the formal leadership by coaches.

In summary, the study had two purposes. First, the "management of personnel" component of a conceptual team leadership model for sport was operationalized by examining the Full Range of Leadership's effect on team processes (depicted in Figure 1.2). By doing so, it was anticipated that greater understanding would be gained about the effect of transformational leaders' styles on team processes, and indirectly on team effectiveness. Secondly, the effect of the congruence of a coach's leadership and the athletes' collective leadership on team processes was examined. More specifically, it was examined whether the match of leadership style between coaches and athletes affects team processes.

Figure 1.2. A Model of Managing Personnel Resources Effect on Team Effectiveness.

CHAPTER 2

LITERATURE REVIEW

A review of literature on leadership must first address the challenge in defining the term. A functional definition of leadership is presented, which is considered the foundation of this study. With a conceptual definition of leadership outlined, a description of the main leadership “theories” in sport highlighting their contributions as well as their limitations follows. Next, some of the classical perspectives of leadership, which have influenced sport leadership theory, are presented.

In the remainder of the literature review, the key segments of the leadership framework proposed above are examined. First, transformational leadership is examined with special attention given to how it may be relevant to the sport domain. Next, a review of the team leadership perspective is given, focusing mainly on Zaccaro et al. (2001) team leadership model. The critical team process of cohesion in sport and aspects of team effectiveness in sport, which are critical to the adaptation of Zaccaro et al.’s model to sport, are then presented. The review ends with conclusions and hypotheses associated with the goal of this project.

Defining Leadership

There is no consensus on a definition of the term “leadership.” There are diverse views of leadership, which contribute to the varying definitions; Bass (1990) maintained that leadership can be examined as coercion, personality characteristics, power, maintenance, initiation of structure, a focus of group processes, or role differentiation. Definitions are often subjective and depend upon the domains and purposes for which they are studied (Yukl, 2002). For example, definitions differ depending on whether one is looking at a leader-follower dyadic relationship or

group relationship. Definitions also vary if one is examining leadership in the military or leadership in a Fortune 500 company or sport.

It is possible to define leadership in terms of a “process.” Northouse (2004) provides a simple definition, “a process whereby an individual influences a group of individuals to achieve a common goal” (p. 3). In many cases researchers more specifically define what a “leader” does rather than defining the general term “leadership.” For example, the following definitions either describe the role of the leader or describe their responsibilities:

The individual in the group given the task of directing and coordinating task-relevant group activities or who, in the absence of a designated leader, carries the primary responsibility for performing these functions in the group. (Fiedler, 1967, p. 8)

The role of the leader is to provide the necessary incremental information, support, and resources, over and above those provided by the formal organization or the subordinate’s environment, to ensure both subordinate satisfaction and effective performance. (House, 1996, p. 326)

Social problem solving, where leaders are responsible for (a) diagnosing any problems that could potentially impede group and organizational goal attainment, (b) generating and planning appropriate solutions, and (c) implementing solutions within typically complex social domains. (Zaccaro et al., 2001, p. 456)

Each of these definitions delineates how the process is carried out in terms of a particular theory. For instance, according to House (1996), a leader influences an organization (subordinate satisfaction and effective performance) through their role (provision of information, support, and material resources). Similarly, Zaccaro et al. (2001) see the leadership process as “social problem solving” and go on to describe the general activities leaders perform for organizational goal attainment. As described below, this project is based on this final definition.

Chelladurai and Saleh (1980) described the characteristics of coaches as leaders with the Leadership Scale for sport, but omitted a clear definition of the leader. This is a fairly typical practice; Fleishman et al. (1991) observed 65 different behavior taxonomies that serve to define

organizational leadership behavior. This exercise of describing the roles of the formal leader rather than defining the term has perhaps produced confusion in defining leadership.

Formal versus Informal Leadership

An important distinction in describing leadership, particularly in the sport domain, is formal versus informal leadership. Formal leadership roles are those prescribed by an organization while informal leadership roles are those that emerge through interaction within a group (Carron et al., 2005). Examples of formal roles are managers, general managers, athletic directors, coaches, and team captains who have specific organizational leadership responsibilities. The majority of investigations on leadership in sport have focused on the formal role of the coach. For instance, Chelladurai's (1978) flagship work with the Multidimensional Model of Leadership centers on head coaching behavior. Smoll and Smith's (1989) Mediation Model focuses on the head coach's behavioral interaction with athletes. Cote et al.'s (1995) Coaching Model centers on the formal role of the coach. Within this framework, leadership is considered one of several managerial functions along with planning, budgeting, scheduling, recruiting, and public relations.

Comparatively, less examination of informal leadership roles exists. In the sport domain there have been efforts to describe emergent "peer leaders" on teams. Glenn and Horn (1993) and Moran and Weis (2006) suggested that sport competency and skill are most related to peer leadership. Somewhat related to informal leadership is the concept of "shared leadership," which can be described as the collective influence of the team rather than the influence of one individual over a team (Cox, Pearce, & Perry, 2003). The idea of shared leadership has yet to be studied in the sport domain.

The distinction between formal and informal roles of leadership highlights that it is important to consider the level at which leadership is conceptualized. Yukl (2002) identified four levels of leadership including: (a) intra-individual process, (b) dyadic process (c) group process, and (d) organizational process. Excluding the intra-individual level, the formal leadership role of the coach may occur at all levels of examination of leadership. Shared leadership is more likely to occur only at the group and organizational level. One of the major purposes for this investigation was to examine how the coach and collective athlete leadership influence a team's effectiveness. While the coach certainly influences dyadic processes with his or her athletes, group processes were only considered herein; a fact that is critical when determining how to analyze team data.

Functional Approach of Leadership

The functional approach to leadership centers on explaining what leaders must provide for team needs. Hackman and Walton's (1986) explanation is the one most often quoted by those who subscribe to this perspective. They state:

The leader's main job is to do, or get done, whatever is not being adequately handled for group needs (McGrath 1964, p. 75). If a leader manages by whatever means, to ensure that all functions critical to both task accomplishment and group maintenance are adequately taken care of, then the leader has done his or her job well. (p. 39)

This explanation of leadership has been the foundation for several investigations in leadership. It is the basis for Fleishman et al.'s (1991) taxonomy of leader behavior. Functional leadership is integral in Mumford et al.'s (2000) skills-based model that was advanced for the purpose of the examination of leadership within the U.S. Army. Finally, Zaccaro et al.'s (2001) team model, which has guided much of the current endeavor, is based on functional leadership.

Functional-based research is focused on social problem solving. The leader must identify and diagnose group issues, generate solutions for these issues, and finally implement the solutions in a social context (Zaccaro et al., 2001). This process takes place in an organizational climate where problems are: (a) novel, (b) complex, and (c) with only ambiguous information provided (Mumford et al., 2000). Specifically, novelty of the climate refers to the new and dynamic situations that occur; complexity refers to how problems often have multiple solution paths allowing the dilemma to be understood in multiple ways; ambiguity highlights the difficulty in ascertaining pertinent information from the environment.

Because a leader's job in the sporting environment is usually a social venture, and often includes many complex elements, the functional approach to leadership appears to fit the sport domain. Jones, Armour, and Potrac (2002) argued that it is essential to begin examination of the social context that coaches work within. In addition, Jones and Wallace (2005) described how researchers must re-evaluate their views of the coaching process due to the complexity and ambiguity faced by sport coaches. Consider, for example, a game situation in basketball where the coach must deal with ambiguous problems that are novel and complex. The basketball game is dynamic, with different opponent strategies, several lead/score changes, changes in momentum, athletes in foul trouble, and so on (novel). If the team is underperforming, the coach must decipher possible underlying reasons. These could include wrong defensive strategy, poor execution, or an incorrect combination of players on the floor. In trying to define the problems it is likely no singular solution path exists (complexity). Finally, within this process there is an abundance of information available to the coach. Not all of the situational information is important. In order to be successful the coach must decide what information is relevant and what

is not (ambiguity). In addition to bearing in mind all these variables, the coach must execute the plan while considering and utilizing available personnel resources.

In conclusion, the process of choosing a proper definition of leadership may be challenging. Unfortunately, many theorists do not even attempt to define the term, making it difficult to specify what exactly is being studied (Barker, 1997; Fleishman et al., 1991). It is probable that a generic definition of leadership is not sufficient in explaining leadership in all organizations. Instead the definition should relate closely with the needs of the organization. As described above, sport leadership reflects problem solving in a social context, and for that reason the functional definition proposed by Zaccaro et al. (2001) was utilized in this endeavor.

Leadership Perspectives in Sport

As mentioned above, the majority of investigation of leadership in sport has been on the formal role of the coach. Without question the most prominent avenue for examining coach leadership in sport has been provided through Chelladurai's (1978) Multidimensional Model of Leadership (MML). Other models such as the Coaching Model (CM; Côté et al. 1995); and the Mediation Model of Leadership (Smoll & Smith, 1989) provide a somewhat more specific focus on aspects of coaching. While "shared team leadership" in sport has been virtually ignored, "peer" or "athlete" leadership has received marginal attention. The following section includes a review of leadership concepts in sport highlighting their contributions as well as their conceptual and practical limitations.

Multidimensional Model of Leadership

Originally formulated by Chelladurai (1978, 1993), the Multidimensional Model of Leadership (MML) has received the greatest amount of attention from sport leadership researchers. Chelladurai's basic proposition is that certain contingencies (situation, member

characteristics, leader characteristics) influence leader behavior in predicting performance and satisfaction. The core of this model consists of three behavioral constructs: *preferred*, *required* and *actual* leader behavior. It is expected that performance improves and satisfaction increases when there is a positive congruence between the *preferred* leader behavior, *required* leader behavior, and the *actual* behavior by the leader.

Leader behavior was originally separated into five dimensions, and measured by the Leadership Scale for Sport (LSS; Chelladurai & Saleh, 1980). These dimensions include: (a) task-oriented behaviors of training and instruction, (b) two decision-making behavioral styles defined as democratic and autocratic behavior, and (c) two motivational behavioral styles called social support and positive feedback. Training and instruction was defined as the teaching of techniques and coordination of team activities. Democratic behavior was the extent to which the coach allows athlete participation in decision-making. The autocratic dimension was the degree to which a coach demands compliance from athletes and emphasizes authority. Coach social support behavior was how the environment was manipulated in order to meet the athletes' interpersonal needs. Finally positive reinforcement was defined as the expression of appreciation for athletes' performance in competition and/or practice. Zhang, Jensen, and Mann (1997) revised the LSS, re-examining the previous structure and adding a sixth dimension of *situational consideration behavior*.

The three contingency factors interact with these behaviors. First, situational variables were proposed to affect what leader behaviors are “required,” as well as those that the athlete “prefers.” Primarily, differences in task type have been of interest within this interaction. For instance, Riemer and Chelladurai (1995) examined preferred leader behavior compared to open or closed skilled tasks. Consistent with their hypothesis, they found that offensive football

players who had closed tasks preferred autocratic behavior, while defensive players who had open tasks preferred democratic behaviors and greater social support.

The second contingency, member characteristics, is proposed to affect the coach's required and the athlete's preferred behaviors. Inquiry into this contingency reveals how athlete gender, personality, or ability interacts with leader behavior. It is suspected that novice athletes need and prefer different direction than those who are more advanced. Chelladurai and Carron (1983) observed that as athletes matured through high school and on to college, they preferred more social support. They also found that less experienced athletes in high school preferred more training and instruction than high school juniors and seniors. Interestingly this study found that university athletes preferred training and instruction, indicating a non-linear trend.

The final contingency factor relates to leader characteristics anticipated to have an effect on the leader's actual behavior. Leader personality, expertise, and/or gender are expected to influence what a leader actually does. For example, Sullivan and Kent (2003) examined how coaching efficacy influences leadership style. Two conclusions were drawn in terms of how leader characteristics predict behavior. First, motivation and teaching efficacy predicted the leader's behaviors of positive feedback and training/instruction. Teaching efficacy accounted for 28% and 42% of the variance of these behaviors, respectively, in the regression model. Second, they found that the behavior of positive feedback was predicted by motivation and technique efficacy. This type of efficacy accounted for 40% of the variance of the leader behavior.

Most of the research examining coach behavior and outcomes has focused on members' satisfaction (see Riemer & Chelladurai, 1995; Weis & Friedrichs, 1986). Findings indicate that the congruence of preferred and perceived social support, effective training and instruction, and positive feedback for good performance, enhanced member satisfaction. Aoyagi, Cox, and

McGuire (2008) have found using structural equation modeling that MML behaviors are associated with satisfaction as well as organizational citizenship behavior. Weis and Friedrichs (1986) investigated the relationship between leader behaviors and coach win/loss records. The prediction that training and instruction relate to a favorable win/loss records was unfounded, and higher levels of social support were related to lower win/loss percentages.

Andrew and Kent (2007) have recently attempted to extend the MML. While they did not look at team performance, they hypothesized that leader behaviors impact not only athlete satisfaction, but also commitment and motivation. Using intercollegiate tennis players' perceptions of leader behaviors, they found that social support was related to sport commitment and extrinsic motivation; positive feedback was related to commitment, extrinsic motivation and intrinsic motivation; and training and instruction was related to intrinsic motivation to know.

The greatest contribution of the MML has been the provision of a conceptual framework, which allows for examination of the factors that affect leader behavior. This follows the example of many early contingency and behavior theories in the management literature. The LSS has been very influential as a tool examining how leadership behaviors affect athletes' outcomes. An unfortunate limitation is the behaviors investigated within this model may not be comprehensive, and are perhaps inconsistent. Yukl (2002) commented that more recent behavior theories are beginning to examine more specific behaviors in effective and measurable ways. The prescribed behaviors for the MML do not meet this trend. Autocratic and democratic "behaviors" may describe how decisions are made rather than actual overt actions. While decision-making style may be important, perhaps these two behavioral dimensions should be examined separately from the other three broad behavioral dimensions. Further examination of transformational leadership behaviors in sport, which can be either autocratic or democratic (Bass & Riggio, 2006), may

provide an alternative way to examine leadership in athletic teams and are subsequently described in detail as a major component of this project.

Mediational Model of Leadership

A heuristic leadership model introduced by Smoll and Smith (1989) has been applied mainly to youth athletics. The Mediational Model of Leadership takes an interactional perspective specifying multiple relationships between situational, cognitive, behavioral, individual difference, and personality variables. The model was designed predominately for applied purposes, and is the basis of the Coach Effectiveness Training program (CET; Smoll & Smith, 2001). One of the unique and distinguishing features of this model is that the outcomes are not viewed as performance or leader effectiveness, but instead are the athletes' evaluative reactions to coach behavior.

The core of the model prescribes that the athletes' perceptions and recollections of coaching behaviors mediate the effect of the behavior on an athlete's evaluative reactions (Smoll & Smith, 1989). These core elements are influenced by three separate factors: coach individual difference variables, player individual difference variables, and situational factors. Coach individual difference variables, such as goals and motives, behavioral intentions, instrumentalities, perceived coaching norms and role conception, inferred player motives, self-monitoring, and sex, are hypothesized to directly affect coach behaviors and coach's perception of player attitudes. Players' individual difference variables described in the model include age, sex, perceived coaching norms, valence of coach behaviors, sport-specific achievement motives, competitive trait anxiety, and general/athletic self-esteem. These are hypothesized to influence both the athlete's perception/recall and athlete's evaluative reactions. Finally, the nature of the sport, level of competition, practice versus game situations, previous outcomes of success,

present outcomes, and intra-team attraction; all are proposed situational factors that are hypothesized to have a direct relationship with all the core elements in the model. To complete the model, the players' evaluative reactions loop back to player perception and actual coach behaviors via the coach's perception of player attitudes.

In most cases, actual coach behavior has been measured using the Coach Behavior Assessment System (CBAS; Smith, Smoll, & Hunt, 1977). This system has been of a substantial contribution to the sport leadership literature providing an observational method to measure behavior rather than paper and pencil methods. The CBAS delineates the behaviors important in the mediational model. There are two major types of behaviors: reactive and spontaneous. The reactive behaviors include reinforcement, non-reinforcement, mistake-contingent encouragement, mistake-contingent technical instruction, punishment, ignoring mistakes, positive technical instruction, and keeping control. The spontaneous behavior dimension consists of general technical instruction, general encouragement, organization, and general communications.

While Smoll and Smith (1989) have provided rationale for their propositions in the model, there is limited empirical evidence supporting the model. Investigation of reactions to coach behavior depending on athlete self-esteem (a player individual difference variable) revealed low self-esteem children responded most favorably to coaches who were supportive rather than not (Smith & Smoll, 1990). Kenow and Williams (1999) provided evidence that athlete individual difference variables of trait anxiety, state cognitive and somatic anxiety, and state self-confidence were related to athlete perceptions and evaluative reactions. Williams et al.'s (2003) findings indicated high trait anxious and low self-esteem athletes perceived coaches to behave in ways that reflected negatively on them compared to low trait anxious and high self-

esteem athletes. In addition, low self-esteem athletes who did not believe they were compatible with their coach perceived the coach as less supportive during competition than did confident athletes.

Most recently, the foundational work on the Mediation Model of Leadership has led to a new *Mastery Approach to Coaching* (MAC) intervention (Smith, Smoll, & Cumming, 2007). This program was developed in response to the great deal of research on achievement goal theory. Though related to CET program, the MAC protocol more explicitly provides behavioral guidelines for a mastery-involving motivational climate. Smith et al. found that athletes on teams with coaches receiving the intervention had less performance anxiety and experienced a higher mastery-climate than control groups.

Behavior theories often over-emphasize the role of perceptions in human behaviors (Uleman, 1991). The cognitive-behavioral approach, which was used as a foundation for the mediational model, actually embraces athletes' perceptions as a core variable for evaluating leadership. Critical to this model is the cognitive processes athletes have in response to the coach behaviors and reactions. According to the model, the athlete's perception of his or her coach's behaviors is as important as the coach's behaviors themselves. With this assumption in place, effectiveness training is focused on helping coaches understand and relate to their athletes.

A potential limitation of this model is its lack of inclusion of performance outcomes. In many cases, especially collegiate and professional sport, the leader is ultimately judged by whether a team or individual is successful or not. For instance, coaches in a number of domains are hired and fired based upon wins and losses. Perhaps it could be argued that athletes' reactions to coach behavior may account for performance outcomes, but this model does not suggest such a linkage. Of course, a great deal of the research conducted with this theory has been with youth

sport, where performance may be secondary to other more altruistic variables. It is also clear that most of the investigation into this model has been of athlete individual difference variables, and their effect on athlete perceptions and reactions. The framework has been an important tool in coaching education for youth athletes, but other frameworks, such as the one proposed herein, may provide an improved method for the examination of leadership in teams.

The Coaching Model

Taking a somewhat different approach to the examination of leadership, Côté et al. (1995) presented the Coaching Model (CM). The CM was created using the cognitive expertise paradigm to examine how a coach's knowledge is processed to solve problems. The purpose of the CM is not to describe all aspects of leadership; instead the CM provides a conceptual framework that can help organize research on coaching, and also investigates how coaches build mental models. More specifically, the model describes the coaching process as a means to the goal of developing athletes. Its aim is to help athletes become experts. The development of expertise requires a great deal of effort and dedication, and it is hypothesized that appropriate coaching is necessary in this endeavor (Salmela & Moraes, 2003).

Côté et al. (1995) used qualitative methods to formulate the CM. In depth interviews were conducted with 17 expert gymnastic coaches. There were three types of questions included that asked coaches to describe their activities, the way they structure their knowledge, and finally to clarify information on certain issues and situations. The authors then organized the responses using the grounded theory approach.

The central component of the resulting model describes the coaching process. This component includes three factors of coach knowledge: *organization*, *training*, and *competition*. These aspects are viewed as a systemic loop where coach organization influences training

procedures, which, along with organizational knowledge, affects competition outcomes (Salmela & Moraes, 2003). The competition outcomes are used as feedback at both the organizational and training levels. The antecedent to all three factors is the coach's mental model of an athlete's potential. The coach's mental model represents what has to be done in the coaching process as a result of these three components in the attainment of the goal, which is ultimately to develop highly skilled athletes (Côté et al. 1995)

Contingency, or "peripheral," variables are also described, which are hypothesized to interact with a coach's mental model. These components include the coach's personal characteristics, the athletes' characteristics and level of development, as well as contextual factors. The coach's characteristics may include his or her philosophy or personal beliefs. Athlete characteristics include skill level and abilities. The environment and all other unstable factors, which may affect organization, training, or competition, are considered to be the contextual factors.

Unlike the MML and Mediational Model, the CM does not specifically describe how coach behavior directly affects athletes. Instead, the CM functions as a tool to help researchers understand the coaching process from the expertise perspective. For example, the CM has been used to investigate coaches' team building (Bloom, Stevens, & Wickwire, 2003); it was used as the foundation for the creation of the coaching behavior scale for sport (Côté, Yardley, Hay, Sedgwick, & Baker, 1999); and the examination of expert coach pre- and post-competition routines (Bloom, Durand-Bush, & Salmela, 1997). The CM has an important role in understanding the coaching process of developing expert athletes, but more research is required before critical differences between expert and novice coaches are determined. Like the

mediational model, the CM has an important role in understanding the leadership and development of individual athletes, but is ill-equipped for explaining the leadership of teams.

Peer Leadership

In arguing for more integrative strategies for the study of leadership, Avolio (2007) asserts, “rapidly changing contexts will place more pressure on leaders to use the talent and wisdom of their top management teams in arriving at critical decisions” (p. 31). While this quote is referring to the management domain, Todd and Kent (2004) similarly acknowledged that coaches believe “players leading players” is an important aspect of athletic endeavor. Considering this sentiment, peer leadership is hypothesized as a critical antecedent to team processes in the proposed framework. The following provides a review of the existing peer leadership literature in sport.

Peer leadership, much like leadership in general, has lacked a consistent definition. Citing this deficiency, Loughhead et al. (2006) provided a broad definition of athlete leadership terming it as an “athlete occupying a formal or informal role within a team who influences a group of team members to achieve a common goal” (p. 144). The most noteworthy difference in this definition compared to typical leadership definitions is the inclusion of informal roles. Whether this definition is sufficient, or a more specific one should be provided, is still unclear.

Carron et al. (2005) distinguished between “formal” and “informal” leadership. Informal leadership was described as a role that emerges as result of group interactions, while formal leadership roles are those that have been explicitly prescribed by an organization. The role of the coach is exclusively formal leadership. Given the perceived importance the coach has for team success, this role has received most of the attention in the literature. However, athletic directors, general managers, and coaches are not the only individuals who hold important leadership roles.

Formal leadership roles are often held by team captains, and informal leadership roles are often filled by athletes who are acknowledged as peer leaders on the team. It is the leadership displayed by these athletes that is reviewed in this section.

While most of the attention has been on examining coach leadership, peer leadership in sport has not been completely ignored by sport scientists. The latter has focused on the description of team leaders such as selection of peer leaders and the correlates of peer leaders. For example, Yukelson, Weinberg, Richardson, and Jackson (1983) found that collegiate athletes identified peer leaders as better performers, and also recognized that peer leaders tended to be with a team longer. Results from Lee, Coburn and Partridge (1983) revealed that the captains of soccer teams were likely to have a central playing position such as center fullback or midfielder.

Glenn and Horn (1993) provided one of the only measurement tools for peer leadership with the Sport Leadership Behavior Inventory (SLBI). The SLBI consists of 19 items that describe characteristics determined to be important for athlete leadership. Peers and coaches rate the athletes on these items in addition to self-ratings by the athletes. Using this scale to identify perceived leaders, Glenn and Horn found that women soccer players and their coaches consider skill to be most related to leadership. In contrast, self-ratings revealed that athletes believe psychological characteristics are most important to leadership. In addition, self and coach leadership ratings provided support for Lee et al.'s (1983) findings that players in central positions are more likely to be leaders.

In recent years it appears more interest exists in regard to peer leadership. Moran and Weis (2006) revisited Glenn and Horn's (1993) research, mainly replicating their findings while extending the results to both female and male adolescent soccer players. In addition, they found peer acceptance and friendship quality seem to contribute to female self-ratings of leadership, as

well as male self- and teammate-ratings. An interesting result from this line of research is the correlation between different groups' leadership ratings using the SLBI. Females' self-rating of leadership correlated with peer- and coach-ratings ($r = .45$ and $r = .31$ respectively), and male leadership self-rating correlated with peers and coaches ($r = .27$ and $r = .29$ respectively). In contrast, the correlation between the coach- and peer-rating of the athletes resulted in $r = .63$ for females, and $r = .85$ for males. Though not a focus for the authors of this study, it appears that coaches and peers rated athlete leadership more similarly than did athletes in self-ratings. This difference could be the result of an inconsistent definition of athlete leadership. If athletes and coaches have different beliefs on what is most important in leadership, this could affect ratings. In addition, the results may reflect that coaches and peers generally put more credence in sport competence and skill, while self-ratings are more strongly related to psychological functions.

Further describing athlete leadership, Todd and Kent (2004) sought to examine preferred peer leadership style. To examine peer leadership, the authors used the Player Leadership Scale (Kozub, 1993), an instrument with 12 items derived from the LSS, and designed to assess athletes' social versus task leadership style. High school athletes were asked to imagine their ideal leader and rank the 12 leadership items according to the image of the leader. They found that an athlete's ideal leader works hard in practice and games, shows respect for others, and expects high levels of performance from oneself and teammates. In addition, overall instrumental items were ranked with greater importance, and males rated instrumental items significantly higher than females did.

In the other line of research investigating peer leadership, authors have sought to examine athlete's leadership behaviors more closely, and also to more effectively describe the leadership climate on a team. Loughhead and Hardy (2005) compared coach and athlete leadership utilizing

the original LSS for coaches and a modified version to judge peer leaders. Results revealed that coaches were more likely to exhibit training and instruction, as well as autocratic decision-making behavior, while athletes were perceived to demonstrate social support, positive feedback, and democratic decision-making style. Though these results may not be surprising, and a further evaluation of a modified LSS for athletes is necessary, it still provides evidence that leadership at the administrative level is different than at the athlete level. Secondary to this finding was the conclusion that athletes other than captains can be considered leaders on a team. In the sample, 27% of the athletes were viewed as leaders with 32.4% believing that captains were the sole source of leadership, and 65.1% believing both captains and teammates were a source of leadership.

With evidence that athlete leadership functions differed when compared to coaches, as well as empirical support that athletes other than captains are considered leaders, Loughhead et al. (2006) provided a further description of peer leadership. In the second study, they classified university basketball players as either “peer leaders” (at least two athletes perceived them as a leader) or “team leaders” (at least half the team felt the individual was a leader). Using Kogler Hill’s (2004) team leadership model, the leaders were judged on task, social, and external leadership functions. It should be noted that the functional aspects of Kogler Hill’s model fall in line with much of the basic assumptions of the current project. Several relevant observations can be made from the data of this unique study. First, captains and starters were more likely to be considered team leaders. In addition, the starters were more often perceived as task leaders. The authors hypothesized this occurred because performance is of the utmost importance for starters. Concerning informal leaders, they were more likely to be classified as peer leaders by

teammates. This sample also revealed that athletes in their third season were most likely leaders followed by fourth year athletes.

The most salient theme revealed by Loughhead et al.'s (2006) research is that skill level, sport competence, and task leadership are crucial factors influencing how coaches and teammates view athlete leadership. This seems to reflect the popular cliché, "leading by example." There are several possible explanations for this. First, most of the research has focused on task related functions of leaders. Loughhead et al. acknowledge this limitation, and included social and external leadership functions derived from Kogler Hill's (2004) team leadership model in the I/O psychology domain. How well, and if at all, this model transfers to the sport domain is currently unknown, and future research, such as the current one, could be dedicated to evaluating the functions of athlete leadership beyond that of the task. It is also possible that athletes high in skill and competence are more recognized as leaders because coaches can more easily recognize these factors. Further, Glenn and Horn (1993) suggested coaches might have a difficult time assessing psychological characteristics. Whatever the case, based on the evidence provided by the research presented up to this point, one must assume that psychological characteristics are important to leadership, and the current scientific effort further illuminated this aspect of athlete leadership.

Another theme throughout the literature reviewed herein is the exclusive focus on the description of athlete leadership. Perhaps a good starting point for a research topic is to first describe and understand the problem. In this way, authors have tried to determine who the leaders on teams are, and what characteristics they possess. The limitation of this research includes the aforementioned problem of a lack of a consistent definition of peer leadership, and moreover a definition of effective peer leadership. Though the research to date provides a solid

understanding of who typically are considered leaders, and some of the characteristics of these individuals, there is no research to support whether they are effective. For this to be accomplished critical functions of a peer leader must be uncovered, and skills, and behaviors which reflect these functions, identified.

Classic Leadership Perspectives

Leadership theories in sport have often borrowed ideas from the Industrial/Organizational Psychology and Management fields. This section describes in some detail the classic leadership perspectives including the trait, behavior, and contingency approaches. These have all had great influence on leadership research in the sport domain to this point, and still inform leadership research today.

Leadership was first described as the traits and personality characteristics of individuals. Those who followed this “Great Man” view attempted to understand leaders by their pasts, including heritage and development through youth. By comparing and describing these exceptional individuals, researchers believed they could determine the makeup of a leader. Due to reviews by Stoghill (1948) and Mann (1959), which suggested personality has little correlation with leader emergence, personality research in regard to leadership was largely disregarded. It has since been claimed that these reviews have been over generalized and greater consideration should be given to personality (Lord, De Vader, & Alliger, 1996).

Recently, a body of literature has developed addressing the relationship between the Big Five Personality traits and leadership (Bono & Judge, 2004; Judge & Bono, 2000; Judge, Bono, Ilies, & Gerhardt, 2002; Smith & Canger, 2004). The 5-factor model of personality includes neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. In a meta-analysis conducted by Judge et al. (2002), corrected correlations of .31, .28, and -.24 were

found between overall leadership criteria and the traits of extraversion, conscientiousness, and neuroticism, respectively. Furthermore, authors believed that the correlations of .53 and .39 between the big five personality traits and leader emergence and leader effectiveness support the need to examine the relationship among personality traits and leadership.

The reviews by Stoghill (1948) and Mann (1959) led to a shift in the predominant examination of leadership personality to a focus on how different contingencies interact with leader traits and behaviors. The premise behind situation-based theories is that a specific leadership personality or behavioral style would not be effective in all situations and with all subordinates. Instead, contextual variables must be taken into account, such as leader follower characteristics, environment, type of organization, and task type (Yukl, 2002). Examples of these situational theories are Fiedler's (1964) Contingency Theory and House's (1971) Path-Goal Theory of leadership.

Though most leadership perspectives at least acknowledge that the situation has influence on leader effectiveness, the examination of leader behavior has been a dominant practice through the latter part of the 20th century until current time. Hemphill and Coons (1957) developed the Leader Behavior Description Questionnaire in which two general types of leader behavior were extracted using factor analysis. First, a consideration dimension, which describes leaders as supportive and accepting to subordinates, and second, an initiating structure dimension, which describes how leaders define roles and establish goals within an organization. Since then there has been an abundance of behavioral taxonomies created, many of which generally have similar dimensions to the Leader Behavior Description Questionnaire (Fleishman et al., 1991). Considering the varying theoretical perspectives and domain differences, there is clearly no consensus of general effective leadership behaviors (Fleishman, et al., 1991; Yukl, 2002).

One of the major criticisms of the behavior approaches to leadership relates to the validity of the assessment tools used. Measurement bias is a major concern because subordinates rate their superiors. Social desirability becomes problematic in situations where a scale may have repercussions for promotion, salary increases, or even dismissal. Uleman (1991) argues that when rating an individual, the responses are most often too preoccupied with perceptions of leadership, and leadership effectiveness rather than specific leader behaviors. In addition, the processes of data analyses that have been used in deriving behavioral taxonomies and theories have been questioned (Fleishman et al., 1991; Schriesheim, 2003; Yukl, 2002).

Regardless, behavioral approaches to leadership are very popular. Transformational leadership theory, described below, has strong behavioral influences, and is currently one of the more accepted leadership theories. Applied leadership facilitators commonly use behavioral leadership assessments in their practice.

Personality, behavior, and contingency leadership theories remain influential in current research. In a special “leadership” issue of the *American Psychologist*, Hackman and Wageman (2007) discussed how we must continue to examine the interaction of leader’s traits and situational contingencies. In addition, Chelladurai’s MML is also very clearly influenced by these approaches. Transformational leadership, which is described next, is considered a “hybrid” leadership theory, which also includes attributes from these approaches and others (Bass, 1985).

Ideas for Team Leadership in Sport

Following the trend using I/O psychology and management leadership research to inform the investigation of leadership in the sport domain, a description of leadership perspectives that may amend some of the current limitations in sport is provided in this section. Specifically transformational leadership is presented followed by a review of team leadership. Using Zaccaro

et al.'s (2001) team leadership framework as a guide, it was proposed that examining the leader's effect on key team processes can benefit the investigation of leadership in interactive sports.

Transformational Leadership

One of the most dominant trends in the leadership literature in the past 20 years has been the investigation of "transformational leadership." Originally described by Burns (1978), it is Bass's (1985) version that is examined most often (Yukl, 2002). According to Bass, transformational leaders raise the level of awareness about the importance of goals, and encourage subordinates to transcend self-interests, in order to motivate people to perform beyond expectations. Though both describe leaders' influence on others, transformational leadership is different from common transactional leadership theories. Transactional leadership is based on the exchange of rewards (or punishment) between leader and subordinate in response to some outcome.

Bass's Full Range of Leadership (FRL) Model has both transformational and transactional dimensions (Bass & Riggio, 2006). These dimensions are largely behavioral, although they also may describe leader attributes. Bass and Riggio's most recent formulation of the theory consists of four transformational and three transactional dimensions, which can be measured with the multi-factor leadership questionnaire (MLQ). The first transformational dimension is *charisma* (also called "idealized influence"). This is a role model behavior, which results in subordinate respect and a belief that the leader has great vision and determination. The next dimension, *intellectual stimulation*, describes the leader's ability to encourage creativity and innovation in regard to current problems and past approaches. The third dimension, *individualized consideration*, addresses a leader's actions that acknowledge followers' specific needs, and his or her capacity to create a supportive environment where a two-way mode of

communication is encouraged. The final transformational dimension, *inspirational motivation*, describes leader's enthusiasm and optimism, which inspire subordinate commitment and a shared vision of goals.

Though the three transactional dimensions are considered less beneficial than the transformational dimensions, *contingent reward* is considered generally constructive (Bass & Riggio, 2006). This dimension describes constructive transactions where the leader promises a reward for the completion of an agreed upon goal. The other two transactional dimensions are *active* and *passive management by exception*. These dimensions describe leaders' active or passive monitoring of subordinates, and correction of mistakes and deviances. In addition to the transformational and transactional behaviors, the Full Range of Leadership includes one non-leadership dimensions called Laissez-Faire leadership. This has been acknowledged as an avoidance of leadership and considered most counterproductive.

Bass and Riggio (2006) believe that the transformational and transactional dimensions interact, and that a good leader exhibits all the attributes and behaviors associated with them, hence the Full Range of Leadership Model. According to these authors, leaders should exhibit the transformational behaviors most frequently. Following these in descending order is contingent reward, active management by exception, passive management by exception, and finally Laissez-Faire behaviors. Furthermore, they describe the augmentation hypothesis, where transformational leadership augments transactional leadership in predicting outcomes. Theoretically, this means that if transactional leadership is supplemented with transformational leadership, the individual's ability to lead will be enhanced. There is conflicting evidence regarding this proposition. For instance Hater and Bass (1988) found partial support for the hypothesis, while Bass, Avolio, Jung, and Berson (2003) found none.

There has been an abundance of research conducted to test the propositions of transformational leadership theory. Bass and Riggio (2006) provided a thorough review of this literature, and described how transformational components relate to several criteria, such as commitment, stress, and satisfaction. Of particular interest is how transformational leadership relates to performance. A meta-analysis consisting of 39 studies supports the hypothesis that transformational leadership is related to work unit effectiveness to a greater extent than transactional leadership (Lowe, Kroeck & Sivasubramaniam, 1996). The authors expressed concern over mono-method bias, and found that there is a stronger relationship between transformational leadership and subordinate perceptions of performance than with organizational methods. This was somewhat addressed by Bass et al. (2003), who measured leader effectiveness by the performance of Army platoons in a two week simulation. Transformational leadership was positively related to platoon performance, but contrary to hypothesis, transactional leadership was equally effective.

A relevant proposition to the current study is that of the *cascading* effect of transformational leadership. This is the tendency for transformational leadership patterns at a higher organization level of leadership to eventually be evident at the subsequent lower level (Bass & Riggio, 2006). Charisma in particular is to be influential in the cascading effect because role model behavior by superiors is proposed to result in modeling by subordinates. In addition, intellectual stimulation by supervisors may lead to improved creative decision making skills in subordinates. Finally, if a supervisor is individually considerate, then the greater sense of well being in subordinates may result in similar transformational behavior. Evidence for the cascading effect was shown by Bass, Waldman, Avolio, and Bebb (1987), who observed upper and lower

level management leadership patterns tended to match. Whether the cascading effect exists from head coaches to athletes is currently unknown, though this could be a fruitful area of research.

Transformational leadership has uniquely contributed to the knowledge base by presenting an alternative to transactional leadership theories. Bass (1985) contended that while transactional leadership may be effective in highly structured settings, which a leader can work within, transformational leadership is necessary to understand leadership within complex and unstable environments. Transformational leadership has been examined in a variety of domains including military (Bass et al., 2003), educational (Koh, Steers, & Terborg, 1995), business (Geyer & Steyrer, 1998; Hater & Bass, 1988; Howell & Avolio, 1993) and sport (Charbonneau, et al., 2001).

Noting the observation herein that the sport environment has the potential for complex interaction, one could expect transformational leadership to have great influence. Although Murray and Mann (2001) discussed transformational leadership as a possible approach to be applied, transformational leadership has still had only marginal influence on leadership research in sport. The most recent conceptualization of the Multidimensional Model of Leadership includes transformational leadership dimensions as antecedents in the model, but little empirical work exists validating this assertion.

The majority of literature on transformational leadership in sport has focused on upper level management rather than on the transformational leadership of coaches of teams and players. For instance, Doherty and Danylchuk (1996) investigated the leadership profile of athletic directors at 17 universities in Ontario. In general, a transformational profile was found in the participant sample, and the transformational behaviors of charisma and individualized consideration were the strongest significant predictors of coach satisfaction. Yusof (1998) also

found a significant and positive relationship between athletic directors who displayed transformational behaviors and the satisfaction of NCAA division III coaches. In terms of commitment and transformational behaviors, Kent and Chelladurai (2001) found that athletic directors' behaviors, particularly charismatic leadership, were correlated with organizational commitment of their subordinates. This result was replicated in the parks and recreation system as well (Kent & Chelladurai, 2003). The authors of this latter article also suggested there was partial support for the cascading effect of transformational leadership.

The relevance of these studies, while supporting transformational leadership as relevant in a sport context, is limited because the relationship between coach and athletes must be considered significantly different than the relationship between athletic directors and subordinates. Unlike upper level management, the task of athletes is based on psychomotor skills and is competitive in nature. Still, there is evidence supporting the proposition that transformational leadership is a factor in the coach-team relationship. In Vallee and Bloom's (2005) examination of coach processes in building successful university programs, they note that the four identified categories are similar to transformational leadership. This is especially true for the "individual growth" and "vision" components. The individual growth component refers to coach behaviors that instills intrinsic motivation and fosters individual growth through empowerment. Vision is defined as behaviors for the purpose of convincing athletes to buy into the coach's philosophy. The coach's behaviors in both these components can be interpreted to reflect the transformational behaviors of "inspirational motivation," "intellectual stimulation," and "individualized consideration."

One of the few empirical studies examining the relationship between the transformational leadership behaviors of coaches and athlete outcomes was conducted by Charbonneau et al.

(2001). Using structural equation modeling, they proposed a fully mediated model with intrinsic motivation affecting athlete performance, and the transformational behaviors of charisma, intellectual stimulation, and individualized consideration affecting both intrinsic motivation and athlete performance. The resulting model accounted for 40% of the variance in performance, and 24% of the variance in intrinsic motivation. It is surprising that considering these significant positive results, more attention has not been given to transformational leadership in the sport domain.

Perhaps the best evidence that transformational leadership is relevant to the sport domain has been provided by Rowold (2006). Examining the transformational and transactional leadership of martial arts students, the 9-factor full range of leadership model was supported. Rowold also found support for the augmentation effect. Using hierarchical linear modeling, transformational leadership was shown to add unique variance beyond that of transactional leadership in terms of the dependent measures of effectiveness, satisfaction, frequency of training, and extra effort. A particularly interesting result from this study was that the transactional component *active management by exception* was found to be highly correlated with the transformational factors. The preliminary hypothesis for this is that taking corrective action on mistakes is an important part of a coach's leadership. The current project followed Rowold's example by assuming that head coaches contingent reward, as well as management by exception active behaviors, positively influence team processes along with transformational behavior.

A promising characteristic of this leadership paradigm, in terms of application to the sport context, is the hypothesis that transformational leaders can be both autocratic and democratic in nature. Bass and Riggio (2006) explain that each of the transformational and transactional components within the full-range of leadership model can be expressed in either a

directive or participative manner. Take for instance a coach who is using inspirational motivation. A directive style calls for the coach to charismatically demand that each athlete work hard and take personal responsibility for improving in order to reach a specified goal. In contrast, a leader implementing a participative style emphasizes working together with athletes to examine what goals are most important for the group. This example demonstrates that the categories of autocratic and democratic leadership are not necessarily behaviors as described in the LSS, but instead different styles used to express important transformational behaviors. This may help explain the weak reliability described by Chelladurai and Riemer (1998), which has been found when examining the LSS autocratic scale. Partially for this reason, herein the full range of leadership model was used as an attractive alternative to the behavioral taxonomies currently used in the sport domain.

Though this reasoning supports the notion that transformational leadership may be relevant in the sport context, limitations do exist. Charbonneau et al. (2001) did not adapt the MLQ to the sport context, and the authors acknowledge that this may have resulted in a low reliability for the factor of individualized consideration. Measurement of transformational leadership in sport must be examined first and foremost and continued examination of the MLQ's performance in the sport context must occur in order to proceed with further research. Rowold's (2006) confirmation of the MLQ's factor structure is a step toward this goal. A final limitation is that even though transformational leadership is based on improving organizations, it has predominately been used as a dyadic theory (Yukl, 2002). This is exemplified by Rowold's (2006) study, which only provides support for transformational leadership in terms of an individual athlete and his/her leader. As proposed herein, team leadership theory may be an important direction for the sport domain.

Team Leadership

One of the current trends in I/O psychology leadership research is to examine leadership in groups and teams rather than leader-member dyads. This is a result of organizations empowering teams with more responsibilities (Yukl, 2002). In his review of leadership in teams, Yukl makes an important distinction between team and dyadic leadership. He explains dyadic leadership theories can explain processes when group members' tasks are typically independent. When group members have similar tasks, and must coordinate between each other, then team processes become important. This distinction is particularly important in sport. Dyadic leadership would appear to be most explanatory for individual sports such as swimming, judo, track and field, and tennis where individual performance is most important. In sports such as basketball, football, and soccer where performance is dependent upon interactions among team members, dyadic leadership models may not be appropriate. It is this need for greater understanding of the team leadership dynamic in sport which has inspired the current endeavor.

When examining team leadership it is important to consider the type of team and its specific characteristics. Sundstrom (1999) indicated that there are *action, performing, production, service, management, project, and parallel teams*. Yukl's (2002) review summarized teams into five general classes: *functional, cross-functional, self-managed, self-defining, and top executive*. These teams can be labeled as low, moderate, high, or variable on several characteristics such as *authority of internal leader, duration of team existence, and stability of membership*. In cases where the internal leader has little authority, or is weak (e.g., self-managed teams, self-defining teams), then the concept of shared leadership becomes extremely relevant. Cox et al. (2003) described shared leadership as a "collaborative, emergent process of group interaction in which members engage in peer leadership while working together" (p. 53). In other

words, instead of leadership coming down vertically through a hierarchy, leadership is distributed laterally between group members.

It is proposed here that organized sport teams are represented best as *functional* teams. Functional teams usually have a formal leader with high authority, have a fairly long-term existence, and have a reasonably stable membership (Yukl, 2002). Zaccaro et al.'s (2001) functional team leadership framework focuses on action and performing teams that carry out group tasks related to psychomotor tasks, competitive tasks, and decision making tasks. In addition to the fact that these characteristics appear to be common to sport teams, functional leadership also has recent precedent in the sport domain. Loughead et al.'s (2006) examination of athlete leadership uses a functional perspective as its basis.

Functional leadership theories allow for the examination of a leader's interaction with team processes. The crux of functional leadership is that the leader's job is to provide whatever the group needs in order to attain their goals (note Hackman & Walton's definition provided earlier). Functional leadership is an I-P-O (input-process-output) model. Leaders' skills, experiences, and behaviors serve as inputs to critical team processes. If these processes are affected positively, then desirable outputs should result. This I-P-O framework is the basis of the study described herein.

Zaccaro et al. (2001) proposed a conceptual framework directed at task performing teams. Their concept includes a two-step model with *leadership processes* affecting *team processes*, which in turn are hypothesized to predict team effectiveness. The leadership processes delineated in the model include the four superordinate activities provided by Fleishman et al.'s (1991) taxonomy of leader behaviors. These activities represent the functional leader's capacity to solve problems within a social context. The first of these is *information search and*

structuring. Zaccaro et al. defined this process as “the leader’s systematic search, acquisition, evaluation, and organization of information regarding team goals and operations” (p. 455). The second leader function is *information use in problem solving*. This process is the use of information gained in creating a clear plan, which fits the team’s goal, as well as communicating, and coordinating this plan with personnel. The next leader function, *managing personnel resources*, is involved in the implementation of a plan with subordinates. Leaders need to obtain, develop, motivate, utilize and monitor personnel. Finally, the last leader function is *managing material resources*. This refers to the adequate provision of material resources that personnel need to perform. Examples in sport are the supply and upkeep of athletic equipment, proper uniforms, and training facilities.

Zaccaro et al. (2001) described four types of “team processes” including cognitive, motivational, affective, and coordination. The cognitive processes are theorized to be dependent on shared mental models, collective information processing, and team metacognition. According to Zaccaro et al., motivational processes include team task cohesion, as well as collective efficacy. Important to affective processes is conflict control, team emotion control, presence or absence of emotional contagion, and finally the team emotional composition. The last process, coordination, requires strong communication and the ability for team members to have behaviors become automatic, especially in complex situations. Based on the interaction of the leader and team processes, seven propositions were forwarded by the authors. The propositions are used to explain what leader actions are required in order to affect the team processes in a desirable way. While these team processes and propositions are proposed for task performing teams, it should not be expected that sport teams reflect these processes identically. The subsequent section briefly describes team processes, which are critical to the framework proposed herein.

The functional perspective is more encompassing than many other theories. Training, developing, organizing, budgeting and other activities that some may consider coaching or managerial behaviors are included in functional leadership because they are crucial to cater to team needs. Such an inclusive framework quickly becomes complex, increasing the difficulty of validating it in its entirety. For example, currently there is very little validation evidence in regard to the operationalization of the conceptual framework provided above. The advantage of this perspective is that it gives researchers the ability to evaluate team processes in regard to leadership. In addition Burke, Fiore, and Salas (2003) pointed out that functional leadership is not limited to the authority of one formal leader. Rather, it is integral that teams' needs are taken care of and less important who is providing for these needs. This is important in considering the extent to which both coaches and athletes on a team exhibit leadership toward influencing team processes; hence the proposed framework included both these formal and informal leadership positions.

As noted in the previous section, transformational leadership research is often focused on leader follower dyads. Transformational leadership in teams has not been totally ignored, and recent strides have been taken to integrate the two leader perspectives. For instance, Keller (2006) found a positive relationship between transformational leaders and the performance of research and development teams. Acknowledging recent trends focusing on leadership *of and by* teams, Bass and Riggio (2006) have proposed that transformational leadership can also be shared between group members. Team members can encourage, inspire, enlighten, and even teach each other in order to work toward a shared vision. A Team Multifactor Leadership Questionnaire (TMLQ) has been created to assess shared transformational leadership (Avolio, Sivasubramaniam, Murry, Jung, & Garger, 2003). This questionnaire contains three

transformational dimensions called *intellectual stimulation*, *inspiring leadership*, and *individualized consideration*. Also included is a transactional dimension named *management by exception (active)* and also a *passive/avoidant leadership* dimension, which reflects Laissez-Faire leadership. Though this is a fairly untested instrument and requires further refinement, it has been used to confirm that shared leadership influences group potency in student work teams (Sivasubramaniam, Murry, Avolio, & Jung, 2002). While it is appropriate that coaches' transformational leadership be evaluated by the MLQ, in order to evaluate the athlete team leadership, the TMLQ can be utilized.

Further evidence that transformational leadership is compatible with team leadership is provided by Burke et al. (2006). They identified transformational and transactional behaviors as part of the *managing personnel resources* and *managing material resources* dimensions of a meta-analytic framework for functional teams. Bass and Riggio (2006) have also proposed that team leadership can be a substitute for formal leadership of a team. They believe well integrated teams can provide all the leadership functions that a formal leader supplies. The formal leader may provide certain needs for the group while the team provides many of the social needs through transformational leadership behaviors and attributes.

Principles from Zaccaro et al.'s (2001) framework presented herein can be practically applied to leadership in team sport. This is partially confirmed by the acknowledgement that it was created to reflect action oriented performing teams that engage in tasks that are psychomotor, competitive or intellectual in nature. Though the requisite functions of leaders probably vary to some extent depending on the specific context, the team sport framework intuitively reflects these central assumptions. A team leadership model in sport requires identifying the leadership skills or behaviors that influence the relevant team processes, which in

turn are important to team performance. The cognitive, coordination, and motivational team processes described in Zaccaro et al.'s model can all be hypothesized to legitimately affect team performance in sport. The following section briefly describes team cohesion in sport, which was hypothesized to be influenced by leaders.

Team Cohesion in Sport

One aspect of social psychology in sport is the identification and description of team processes, which affect outcomes such as athlete's satisfaction and team's performance.

Cohesion, collective efficacy, coordination, and communication are all processes identified as components of team dynamics (Carron et al., 2005). Critical to establishing a framework of team leadership in sport is establishing a relationship between these processes and team leadership.

Cohesion is one of the most studied aspects of team dynamics in sport, and is also one of the two lower-order team processes identified by Zaccaro et al. (2001). Carron et al. (1998) defined leadership as "a dynamic process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (p. 213). It is conceptualized in sport to have two broad categories identified as *individual attractions to the group* (IAG) and *group integration* (GI). The IAG category describes how appealing the team is to an individual member, while GI describes the perception of the entire team's integration or unity. There are both social and task aspects to each of these categories. Take for instance the IAG category, a team member may enjoy performing strategies together (task) or enjoy the relationship he/she has with other group members (social). In terms of GI, the group may agree upon a particular game strategy (task) or the team may party together as a unit (social).

Numerous empirical connections have been drawn from leadership to cohesion. Using the LSS, Westre and Weis (1991) found that coaches who are perceived to exhibit social support behavior, training and instruction behavior, a positive feedback behavior, and democratic decision style were related to teams with high task cohesion. Jowett and Chaundy (2004), also using the LSS, found leadership to be a strong predictor of both task cohesion ($r^2=.34$) and social cohesion ($r^2 = .15$). In general, leadership appears to have a greater relation to task cohesion. Considering other leadership perspectives, Callow et al. (2009) used a transformational leadership scale designed for sport to examine its relationship with cohesion. They found that leaders' transformational styles predicted both task and social cohesion. Overall similar results have been found when examining peer leadership's relationship to cohesion. Weis and Price (2011) have most recently found evidence associating peer leadership with cohesion. Cohesion has also been proposed to have a relationship with athletic performance, though whether performance has a greater affect on cohesion or vice versa is still open to debate (Paskevich, Estabrooks, Brawley, & Carron, 2001).

Team Effectiveness

Like Zaccaro et al.'s (2001) description of team leadership, it is proposed herein that leader processes affect team effectiveness by positively affecting team process. Just like the needs of each team differ, so do the expectations for team effectiveness. Referencing the functional definition of leadership, which this model is founded, the leader provides whatever a team needs in order to maintain the group and accomplish group goals (Hackman & Walton, 1986). This infers that team effectiveness is achieved if the collective goals of the team are met, and the group is maintained.

Sport provides a somewhat unique problem in terms of team effectiveness. Ultimately teams are judged upon wins and losses against other teams, but these outcomes are often dependent on an opponent's performance as well as a team's own performance. In addition, the amount of wins vs. losses a team possesses does not fully describe whether a team is effective or not. For example, a football team with great resources such as Florida State may be classified as ineffective with a winning record of 7 and 6, while a team like North Dakota with fewer resources would be considered effective with the identical record.

Ultimately a team's effectiveness in sport can be judged upon its progress toward relevant team performance goals. By examining performance goals, one can then judge effectiveness on execution rather than outcomes. Performance goals may include less turnovers and penalties in basketball, or greater completion percentage or average yards per rush in football. The most effective teams are also able to adapt to difficult environmental circumstances and maintain standards. The establishment of quality goals is one of the most important jobs for coaches and sport psychologists. Brawley et al. (1992) examined the process and outcome goals teams established in practice and competitions. Process goals were most prevalent in practice, while in competition there was little difference in the amount of each type of goal.

Conclusions and Hypotheses

The sport domain has been considered a fruitful area for the study of leadership (Smith & Smoll, 1990). Leadership perspectives in sport have focused primarily on the relationship of coach behaviors with individual athlete satisfaction and performance. Theorists have used models to attempt to explain how coaches develop their athletes. Though these perspectives have increased understanding of the relationship between coaches and athletes, team leadership and its effect on group processes has largely been ignored. In addition, while transformational

leadership has been proposed to be a rich area of examination in the sport domain, too few empirical investigations have been conducted in the athletic environment.

The framework proposed herein, is based largely on principles of Bass's (1985) Full Range of Leadership Model and Zaccaro et al.'s (2001) Functional Team Model. Both conceptual frameworks serve as a foundation to further investigate team leadership in sport. Following Burke et al.'s (2006) examination of functional behaviors in teams, leadership as described within the proposed framework is represented as problem solving in the social context. Transformational and transactional leadership in particular represent the “managing of personnel” component of leader problem solving. Following the I-P-O model, which most team leadership models adhere to, the relevant team process of cohesion, was proposed to be influenced by these leadership inputs. Cohesion influences team effectiveness represented by accomplishment of goals. The hypothesized structural model is depicted in Figure 2.1.

Figure 2.1. Hypothesized Structural Model of Team Leadership's Effect on Team Effectiveness.

An important aspect of this model is that leadership is not limited to that of the formal coach, and can be represented or perhaps even substituted by shared athlete leadership. For instance, Loughhead et al. (2006) found athletes take on leadership functions within teams. An important aspect of transformational leadership is that the formal leader will empower followers to become leaders themselves. This is often called the *cascading affect*, and preliminary support for this has been found in the parks and recreation system (Kent & Chelladurai, 2003). In addition, Bass and Riggio (2006) have also suggested that in high performing teams, the leadership of a formal leader can be substituted for by group transformational leadership. Along with examining the proposed framework, the intention of this research project was to examine the relationship between coach and athlete leadership.

In addition to the expectation that the model presented in Figure 2.1 would fit the data, three hypotheses were formulated in reference to these objectives.

1. Leadership of both the head coaches and the athletes would relate to *cohesion*:
 - (a) Leadership by the coach would moderately and positively be associated with the team process of *cohesion*.
 - (b) Shared athlete team leadership would positively be associated with the team process of *cohesion*.
2. The team process of *cohesion* would moderately and positively be associated with *goal achievement*.
3. Head coach leadership and shared team leadership would be moderately and positively correlated, and add to each other's account variance of cohesion.

CHAPTER 3

METHOD

Participants

In determining what sport to include in this study, the types of interactions that exist between coaches and athletes were considered. Team processes are less critical in sports such as swimming or golf where the athlete's tasks are independent of his/her teammates. In contrast, Yukl (2002) explained that team processes are critical when a great deal of coordination and interaction is required among members with like-tasks. Considering this, Division I, II, and III NCAA collegiate softball and baseball teams, which involve interdependent team interactions, were used for the study. Data were collected from a total of 50 teams including 14 men's teams and 36 women's teams. Overall, 610 athletes agreed to participate in the study. Their ages ranged between 18 and 24 years.

Instrumentation

Four questionnaires were used in this study to operationalize the variables constituting the model depicted in Figure 3.1. To assess leadership, the Multifactor Leadership Questionnaire-5X and the Team Multifactor Leadership Questionnaire was administered. To assess cohesion, the Group Environment Questionnaire was utilized. The Team Outcomes Questionnaire created for this study assessed goal accomplishment. A demographics form was also utilized to collect normative data. Figure 3.1 displays the structural equation model highlighting how each component was measured.

Figure 3.1. Hypothesized Structural Model of Team Leadership with instrumentation.

Multifactor Leadership Questionnaire (MLQ; Avolio & Bass, 2004; Appendix A).

Transformational leadership is one of the most studied constructs in the leadership domain, and while several methods have been employed to assess it, the Multifactor Leadership Questionnaire is undoubtedly the most popular (Bass & Riggio, 2006). The most recent version, the MLQ-5X (Avolio & Bass, 2004), measures 9 leadership factors that represent the Full Range of Leadership. It consists of 5 transformational factors (*Idealized Influence Attributed*, *Idealized Influence Behavior*, *Inspirational Motivation*, *Intellectual Stimulation*, and *Individual Consideration*), 3 transactional factors (*Contingent Reward*, *Management by Exception Active*, and *Management by Exception Passive*), and one non-leadership factor (*Laissez-faire*). Table 3.1 gives an example item for each of the transformational and transactional scales.

Table 3.1

MLQ Factors and Example Items (From Avolio, B. J., & Bass, B. M. (2004). *Multifactor Leadership Questionnaire*. Mind Garden, Inc.)

Leadership Factor	Item
Idealized Influence (Attributed)	Goes beyond self-interest for the good of the group.
Idealized Influence (Behavior)	Talks about his/her most important values and beliefs
Inspirational Motivation	Talks optimistically about the future
Intellectual Stimulation	Re-examines critical assumptions to question whether they are appropriate.
Individual consideration	Spends time teaching and coaching
Contingent Reward	Provides me with assistance in exchange for my efforts
Management-by-Exception (Passive)	Fails to interfere until problems become serious.
Management-by-Exception (Active)	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards
Laissez-Fair	Avoids making decisions

Each leader factor consists of 4 items, which describe leader behaviors. The MLQ has both a leader form and rater form. The leader form asks the leader to self-rate how frequently the statement fits him/her using a 5-point scale ranging from 0 (*not at all*) to 4 (*frequently, if not always*). The rater form only differs from the leader form with the addition of the stem: “The person I am rating...” The current study utilized the rater form.

Substantial psychometric evidence has been accumulated on the MLQ, yielding ample reliability and validity information. Avolio and Bass (2004), in their most recent MLQ manual,

claim that the current version is the most consistent and valid. They reported internal consistencies for the 9 scales range from .70 - .84 on the rater scale (lower level than leader), and .60 - .79 when leaders rated themselves. In addition, through confirmatory factor analysis, they found the data best supported the 9-factor model for both the rater form and leader form (GFI = .91/.93, AGFI = .89/.91, CFI = .91/.89, and RMSEA = .05/.05).

One of the greatest criticisms of the MLQ is the finding of high correlations among the transformational factors indicating the scales may not truly indicate different types of transformational leadership (see Antonakis, Avolio, & Sivasubramaniam, 2003, for a summary of studies testing the factor structure of the MLQ). A recent example of the psychometric features of the MLQ comes from Avolio and Bass's (2004) MLQ manual. The data showed significant high correlations among all the transformational factors ranging from .60 - .71. In addition, the transactional component of contingent reward was also highly correlated with the transformational factors (r 's = .63 - .71).

Early studies evaluating the predictive validity of the MLQ relied mostly upon the built-in items representing the criterion of "extra-effort," "leader effectiveness," and "satisfaction." A meta-analysis, utilizing 23 studies with the MLQ provided evidence that transformational behaviors are related to these effectiveness indicators (Lowe, Kroeck, & Sivasubramaniam, 1996). Issues of mono-method bias have been a concern regarding this method of evaluating leader effectiveness with the MLQ. This was somewhat addressed by a larger scale meta-analysis conducted by Judge and Piccolo (2004), which included more studies using more objective criterion. This meta-analysis consisted of 87 studies, including a few utilizing measurement tools other than the MLQ. The results indicated that transformational leadership significantly predicted "follower satisfaction," "follower motivation," and "leader effectiveness." Judge and Piccolo

(2004) indicated that the effect sizes were much lower in their meta-analysis compared to Lowe et al. (1996), hypothesizing that more rigorous research including the different outcome criterion might be a cause.

Bass (1985) conceptualized the “augmentation effect,” which proposes that transformational behaviors enhance the performance of subordinates beyond the effects of transactional leadership behaviors. Central to the issue of validity, the MLQ has provided mixed results in terms of this fundamental transformational leadership proposition. This was typically tested via hierarchical linear modeling with transactional leadership factors being entered into the equation first followed by transformational leadership factors. Hater and Bass (1988) using two samples from a US. corporation found that there was support for the augmentation effect in both “top-performer” and “ordinary-manager” participant groups (F -ratios of 87.88 and 141.62 respectively). In contrast, Bass et al. (2003) found no support for the augmentation effect within military platoons. This result was attributed to the fact that contingent reward was the only transactional behavior entered into the equation, even though the authors acknowledged it as having transformational characteristics. Overall, the authors of the MLQ cite several studies supporting the “augmentation effect,” but it seems reasonable to believe further investigation is required before coming to a definitive conclusion.

An apparent strength of the MLQ is its external validity. The MLQ has been used to examine transformational leadership in many settings including organizational (Hater & Bass, 1988), education (Koh et al., 1995), and the military (Howell & Avolio, 1993). In addition, the MLQ has been translated into Spanish, Portuguese, Italian, French, German, Norwegian, Swedish, Hebrew, Turkish, Arabic, Chinese, Thai, and Korean (Avolio & Bass, 2004).

Antonakis et al. (2003) claimed that the context should be considered in using the MLQ, and that some of the reported inconsistencies have been due to non-homogenous samples. Considering this, it is important to validate the MLQ in the sport domain as well as the military, educational, and business domains. Most recently, the MLQ-5X was tested in the sport domain with martial arts students (Rowold, 2006). Using confirmatory factor analyses, the 9-factor model was found to fit the data best (NFI = .93, CFI = .93, RMSEA = .062). With the exception of the Management-by-exception Passive scale ($\alpha = .45$), the factors had low to moderate internal reliabilities ranging from .62 - .74. In addition, transformational leadership factors accounted for unique variance of the dependent measures of “extra effort,” “effectiveness,” “satisfaction,” and “frequency of training per month.” This finding also supports the augmentation effect discussed above. Ultimately, given some of the limitations mentioned above and the relative lack of use in sport, the structure of the 36-item MLQ was examined thoroughly during preliminary analysis.

Team Multifactor Leadership Questionnaire (TMLQ, Avolio & Bass, 1996; Appendix B).

With greater interest in shared leadership, the original Multifactor Leadership Questionnaire was adapted to assess distributed leadership in teams. The TMLQ was developed by considering the definitions of the components in the full range of leadership model, reviewing team leadership literature, and interviewing individuals who worked in teams (Avolio et al., 2002). Identical in structure to the MLQ, the TMLQ includes 5 transformational factors, 3 transactional factors, and the single Laissez-Faire component. The instrument comprises 45 items, 5 items per subscale. The items ask participants to identify the frequency, on average, of behavior their group displays in each statement. A Likert-type scale ranging from 1 (*not at all*) to

5 (*frequently, if not always*) is used to rate each item. Table 3.2 provides an example item from 4 subscales of the TMLQ.

Also, like the MLQ, the transformational factors on the TMLQ are highly correlated. This was also true in a modified 5-factor version of the TMLQ developed by Avolio et al. (2003). In the validation studies, correlations ranged from .55 to .88 on the transformational scales (Avolio et al., 2002). Given this, it is not uncommon for researchers to combine these scales into one transformational dimension (Sivasubramaniam et al., 2002).

Table 3.2

TMLQ Factors and Example Items (From Avolio, B. J., & Bass, B. M. (1996). *Team Multifactor Leadership Questionnaire*. Mind Garden, Inc.)

Leadership Factor	Item
Idealized Attributes	Instill pride in being associated with each other
Idealized Behaviors	Emphasize the importance of being committed to our beliefs
Inspirational Motivation	Members of my team work out agreements for what's expected from each other
Intellectual Stimulation	Members of my team envision exciting new possibilities
Individualized Consideration	Members treat others as individuals
Contingent Reward	Work out agreements about what's expected from each other
Management by exception Active	Members of my team closely monitor each other's performance for errors
Management by Exception Passive	Delay taking actions until problems become serious
Laissez-faire Leadership	Members of my team avoid addressing problems

There is little evidence for predictive validity due to the fact the TMLQ is still a relatively untested instrument. Sivasubramaniam et al. (2002) found transformational team leadership predicted potency over time, and also indirectly influenced group performance. Avolio et al. (2002) conceded that continued research is necessary to refine the TMLQ. Nevertheless, it is one of very few instruments that assess shared leadership, and the fact that it includes aspects of both transformational and transactional leadership makes it ideal for the current study. The structure of the 45-item version of the TMLQ was examined during preliminary analyses.

Group Environment Questionnaire (GEQ; Carron et al., 1985; Appendix C).

This scale was designed to assess individual athletes' perceptions of cohesion described as "Group Integration" and "Attraction to the Group." Athletes assess these two concepts in terms of the dichotomy of task and social interaction resulting in four separate scales called Group Integration-Task (GI-T), Group Integration-Social (GI-S), Interpersonal Attractions to the group-Task (ATG-T), and Interpersonal Attractions to the Group-Social (ATG-S). Each of the 18 items asks respondents to select a value that best represent his/her view on a scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). Some of the items on the scale are positively worded (e.g., "some of my best friends are on this team"), and others negatively worded (e.g., "I do not enjoy being part of the social activities of this team").

Carron et al. (1985) reported Cronbach's alpha coefficients of .75 for ATG-T, .64 for ATG-S, .70 for GI-T, and .76 for GI-S. Short, Sullivan, and Feltz's (2005) study on collective efficacy and the GEQ revealed alphas of .63 for ATG-T, .68 for ATG-S and GI-T, and .82 for GI-S. The examination of the factor structure for the GEQ has resulted in mixed results. For example, Schutz, Eom, Smoll, and Smith (1994) strongly criticized the factorial validity of the GEQ. Conducting a confirmatory factor analysis (CFA) on data obtained from high school

varsity athletes, they found the fit indices indicated a poor fit to the original 4-factor model, and that several of the factor loadings were unacceptably low. In contrast, Li and Harmer (1996) using a sample of 321 collegiate athletes conducted a CFA on the GEQ, and found that the 4-factor model was a good fit to the data ($\chi^2 = 2.135$; CFI = .910; TLI = .892; RMSEA = .059). It should be noted though that inter-correlations among factors ranged from .71 - .91, which places into questions the multidimensionality of the construct. Acknowledging that the nature of cohesion is more complex than many other constructs, Carron et al. (1998) explained that when responding to items on cohesion the individual is answering in reference to the entire team, which makes it prone to higher variability. Regardless of questions about the validity and reliability of the GEQ, it remains the most widely used measure of cohesion in sport psychology. As a result the entire 18-item questionnaire was examined thoroughly via preliminary analyses described below.

Team Outcomes Questionnaire (TOQ; Appendix D).

This scale, created for the purpose of this study, consists of 9 items that describe goals relating to skills, strategy, effort, competitive outcomes, and fitness. These areas were selected partially considering a content analysis of team goals by Brawley et al. (1992). Participants are asked to answer to what degree did their team achieve each goal on a 5-point Likert-type scale ranging from 0 (*not at all*) to 4 (*Completely*). This scale shares face validity with its dimensions and intentions, and is based upon Brawley et al.'s research findings. The scores from the nine items are summed, resulting in a range of 9 - 45. In addition, items 1, 3, 5, 7, and 8 are outcome goal related, and items 2, 4, 6, and 9 are process goal related. The outcome items are summed ranging from 5 - 25, and the process items range from 4 - 20. Before using the TOQ in final analyses, the structure of the scale was tested to examine the hypothesized 2-factor structure.

Demographics (Appendix E)

Demographics were gathered from the athletes on each team. The basic demographic information included the athletes' age, race, and year in school. The form also requested information pertaining to starting status, formal leadership role, and experience playing their sport.

Consent Form

Before completing questionnaires, participants were asked to agree to an online consent form (see Appendix F). The form describes the purpose of the study and informs participants of expectations and that there are not foreseeable potential dangers associated with involvement.

Procedure

IRB approval (see Appendix G) was attained from the Florida State University Human Subjects committee prior to data collection. The 1,563 head coaches from every Division I, II, and III softball and baseball teams were contacted via email. This email message briefly explained the study and asked permission to administer on-line surveys to the athletes on their teams. Coaches were given two options for the distribution of on-line questionnaires. The first option was for coaches to give the researcher their athletes' email addresses for distribution. The advantage of this option was that athletes could complete the on-line surveys at their own pace. This was favorable considering it took 30 minutes to complete all the questionnaires, and therefore this option may have reduced fatigue. The second option was that the coaches would be sent a link to the on-line survey, which he or she would then distribute to the athletes. The advantage of this option was to ensure anonymity of the athletes, the disadvantage that they would need to complete all surveys in one sitting. Some coaches were forced to choose the second option because of the team's university rules.

It was determined that on-line survey was the best and most efficient method to distribute the numerous questionnaires for this study. There is increasing evidence that on-line survey is an effective and equally reliable method of measuring psychological constructs compared to the paper and pencil method (Schmidt, 1997; Gosling, Vazire, Srivastava, & John, 2004). Web-based measurement advantages include increased access to population, conservation of time and money and potentially more accurate and complete surveys. Evidence supporting the use of web-based questionnaires was presented by Joinson (1999), who reported that participants taking internet-based questionnaires showed decreased levels of social desirability. Similarly, Davis (1999) suggested participants taking an online questionnaire are more forthright in answering items and that ultimately web-based surveys were comparable to standard procedures on a personality questionnaire. On the issue of reliability, Miller et al. (2002) found no significant difference in test-retest reliability with web-based measures of alcohol use and found preliminary support that there is no significant difference in results when comparing distribution methods. Moreover, 80% of participants indicated they found the web-based instrument to be convenient to use, while only 8% preferred the paper and pencil measurement.

The use of web-based questionnaires particularly fitted this project considering that a large number of teams were surveyed in order to utilize structural equation modeling data analysis described below. By distributing questionnaires electronically it eliminated the large amount of paper and postage needed to distribute questionnaires to this large number of teams. Moreover, it took approximately 30 minutes for an athlete to complete all questionnaires. This method also helped in terms of accessibility to participants as coaches were not asked to allocate important practice time to survey completion. In addition the electronic method ensured that the surveys were completed at a similar point in each team's season. Avolio et al. (2003) emphasized

that as teams work together for a longer period of time, their level of agreement on leadership ratings should become more congruent. Considering this, the questionnaires were available for completion at the three quarters point of the team's season. Finally, Schmidt (1997) specifically suggested that web-based research provides the benefit of less time spent on data entry as well as cost. These benefits were a significant advantage for this project considering the large number of participants needed for this project.

The coach of the team sent an email to his or her athletes briefly explaining the purpose of the study and asking them to complete the questionnaires within a set two-week period. In order to increase response rate, three reminder emails were sent during this period. If the coach provided the researcher with athlete emails, the reminders came from the researcher. In the case where the coach was sending the survey link to the athletes, the coach was also responsible for forwarding the researcher's reminders to the athletes. Informed consent was obtained from the athletes as the first page of the online questionnaires. It was stressed to the athletes in the coach's email as well as part of informed consent that all answers to the questionnaires were confidential, and the coaches would not be informed of an individual's responses.

Data Analysis

To test the four hypotheses, structural equation modeling (SEM) was utilized. This method allows for the estimation of complex causal relationships of latent variables based on justified theory (Hair, Anderson, Tatham, & Black, 1998). Before conducting this statistical analysis, certain criteria were inspected. First, the measurement properties of each instrument were examined closely. Without proper measurement of the hypothesized variables it is difficult to get sufficient results via SEM. Inter-item correlations within scales were examined as well as the mean inter-items correlations among each instrument's sub-scales. This process was

conducted in order to determine if certain items were not fitting well within subscales. Subsequently Exploratory Factor Analysis (EFA) was considered for each instrument. It is not uncommon for researchers to re-examine the structure of the MLQ and TMLQ. Jung, Chow, and Wu (2003) used partial least squares structural equation modeling to extract an 18-item transformational scale since the individual transformational subscales were highly correlated. EFA was applied for the GEQ considering the typically low internal reliability that is often found (Carron, Brawley, & Widmeyer, 1998). Lastly, the TOQ was developed for this study, and it was deemed appropriate to explore its hypothesized 2-factor structure. After examining measurement properties, the variables were subjected to multivariate normality testing in an attempt to avoid Type 1 error. This was done by examining the skewness and kurtosis of the distributions.

Following recommendations by Anderson and Gerbing (1988), a two-step process was applied including a test of a measurement model followed by a test of the structural model. The test of the measurement model equated to that of a confirmatory factor analysis. The hypothesized model included the latent variables of *coach leadership*, *team leadership*, *cohesion*, and *goal achievement*. If the fit of this model was poor, alternative models were considered with the understanding that a poor measurement model cannot result in a good structural model. Alternative models were only considered if theoretically sound, and also included information from the path coefficients and from modification indices given by the LISREL 8.80 software.

With confirmation of a sound measurement model, the structural model was tested to examine the causal links among the psychological constructs. In testing the overall fit of these models it is appropriate to use multiple “goodness of fit indices” (Hair et al., 1998). Kline (2005) suggests the χ^2 statistic, the *Root Mean Square Error of Approximation (RMSEA)* and *Comparative Fit Index (CFI)* as a partial set of indices for assessing model fit. Kline also

emphasizes that no one index is the “gold standard,” and that is why a model should be assessed by multiple indices. The most basic of these is the χ^2 statistic, which tests the null hypothesis between the observed and implied covariance matrices (Gibbs, Giever, & Higgins, 2003). A low χ^2 statistic is desirable with a value of zero representing a perfect fit (Kline, 2005). The RMSEA value is based on comparing the residuals of the observed and specified covariance matrices. Values of .08 and below are considered reasonable fit (Browne & Cudeck, 1993), and values equal to or less than .05 are considered evidence of good model fit (Hu & Bentler, 1999). The CFI is a non-centrality index with values greater than .95 exhibiting an acceptable fit (Hu & Bentler, 1999). Once the overall fit of the model was examined, the path coefficients for the structural model were evaluated.

Considering that the athletes were nested within teams, multi-level structural equation modeling (MLSEM) was also utilized. This analysis allowed the researcher to examine both within team and between team relations. The advantages of MLSEM is that the variance that exists in the variables between teams is modeled, and that the within team analysis is more powerful considering the between team covariance matrix provides additional information to the within team relations (Stapleton, 2006). More specifically, when examining data at the between team level, it is possible to assess how an average team’s leadership influences cohesion in relation to other teams. LISREL 8.80 software was utilized to conduct the multi-level analysis.

CHAPTER 4

RESULTS

The results chapter is divided into three sections. The first section centers on preliminary analyses including a description of missing data, the characteristics of the population, the reliability of the scales, and an examination of the assumptions related to structural equation modeling. Following this is a description of the single level structural equation modeling (SEM) technique used to test the study's hypotheses. Finally, to further test the study's hypotheses, the multilevel structural equation modeling (ML-SEM) is provided.

Preliminary Analyses

Of the 610 participants coming from the 50 teams who agreed to participate, 44 did not complete any questionnaires beyond the demographics page. Following inspection of the 566 participants' data, an additional 48 participants were detected as not fully completing the first questionnaire, or the remaining questionnaires. These participants' responses were also deleted from the study as this small amount of data were unusable in the data analysis. Subsequently, the final sample consisted of 518 athletes from 36 softball teams and 13 baseball teams. The final participants' ages ranged from 18 to 24 years ($M = 19.89$, $SD = 1.24$) of whom 297 respondents (57.1%) indicated they were starters. The majority of the respondents were underclassman with 153 freshman (29.5%), 148 sophomores (28.6%), 109 juniors (21.0%), 96 seniors (18.5%), and 10 graduate students (1.9%). Captains or co-captains were represented by 74 respondents (14.4%). Interestingly, participants from 6 teams indicated in various ways that their teams did not have captains, and in some cases, they stated that everyone was a leader. For example one respondent wrote, "Everyone can be a leader. We don't have captains and such."

While all 518 participants did complete the TMLQ, some chose not to complete the rest of the online survey. In summary, 500 participants completed both the TMLQ and MLQ, 489 participants completed these, as well as the GEQ, and 486 participants completed all the questionnaires including the TOQ. The structural equation modeling analysis utilized Peugh and Enders' (2004) suggestion that to account for missing data, while minimizing loss of data, full information maximum likelihood estimation can be used.

The internal consistency reliabilities of all four instruments were examined thoroughly beginning with the Multifactor Leadership Questionnaire. These were all computed utilizing coefficient alpha. The internal consistency reliabilities for the 9 MLQ subscales ranged from .63 to .89. These reliability coefficients along with each scale's inter-item correlation matrix are presented in Table 4.1. The mean inter-item correlations ranged from .30 - .68 with only the *Management by Exception Passive* (MBEP) scale having an inter-item correlation mean below .45. Further, item 17 of this scale correlated very low with MBEP items 3 and 12. A reliability analysis indicated that the removal of item 17 would increase the scale's reliability coefficient from .63 to .79. Considering all this information, item 17 was excluded from further analysis.

In order to assess whether the MLQ scales were properly discriminating from each other, the mean inter-item correlations among scales were also observed, and are shown in Table 4.2. Campell and Fiske (1959) argued that there is lack of discriminant validity when scales that theoretically measure something different correlate highly; moreover, if these between scale correlations are nearly as high as the scales reliabilities it becomes difficult to prove that the scales discriminate. The correlations' magnitudes indicated that the mean inter-item correlations among the *transformational* subscales as well as the *Contingent Reward* subscale, were moderate (r 's = .42 - .59) while the within scale mean inter-item correlations were slightly higher (r 's =

.45 - .68). To test the extent the scales overlapped, a corrected correlation was computed between scales using the formula, $r_{xy} / (r_{xx} * r_{yy})^{1/2}$, where r_{xy} is the correlation between scale x and scale y, r_{xx} represents the reliability of x, and r_{yy} is the reliability of y. Corrected correlations above .85 are considered indicators of a lack of discriminant validity between scales (John & Benet-Martinez, 2000). With the exception of *Intellectual Stimulation's* comparison with *Idealized Influence-Behavior* ($r = .83$) and *Inspirational Leadership* ($r = .82$), all of the corrected correlations between transformational scales were above .86, suggesting these scales are not measuring separate aspects of transformational leadership. In addition, the two *Management by Exception* subscales, as well as the *Laissez-Faire* subscale, shared positive low inter-item correlations among them. It should be noted that the corrected correlation between the *Management by Exception-Passive* subscale and *Laissez-Faire* subscale was .94, indicating these two scales also share very similar characteristics.

That all these scales were correlated was not an uncommon finding; Tejeda, Scandura, and Pillai (2001) discussed the psychometric properties of the MLQ in detail, and utilized three separate participant samples finding moderate to high transformational scale correlations (r 's = .78 - .90). In response, many authors have modified or combined scales to create a global measure of transformational leadership. For instance, Jung, Chow, and Wu (2003) using partial least squares structural modeling extracted an 18-item transformational leadership scale, which they then used to test a larger mediated model of organizational innovation. Given this precedent, the clear correlation between scales with data gathered for this study, and the comparative lack of examination of the MLQ in the domain of sport, the instrument was submitted to Exploratory Factor Analysis (EFA).

Table 4.1

Inter-Item Correlations within MLQ Subscales

Scale	Item	10	18	21	25
Idealized Influence- Attributed	10				
	18	.67			
	21	.75	.73		
	25	.50	.53	.53	
		6	14	23	34
Idealized Influence- Attributed	6				
	14	.45			
	23	.46	.59		
	34	.45	.69	.58	
		9	13	26	36
Inspirational Leadership	9				
	13	.63			
	26	.68	.69		
	36	.61	.69	.74	
		2	8	30	32
Intellectual Stimulation	2				
	8	.41			
	30	.52	.51		
	32	.59	.54	.76	
		15	19	29	31
Individual Consideration	15				
	19	.48			
	29	.25	.36		
	31	.77	.54	.27	
		1	11	16	35
Contingent Reward	1				
	11	.44			
	16	.60	.41		
	35	.61	.46	.58	
Scale	Item	4	22	24	27
Management by Exception- Active	4				
	22	.36			
	24	.49	.34		
	27	.54	.37	.60	
		3	12	17	20
Management by Exception- Passive	3				
	12	.63			
	17	.03	-.02		
	20	.47	.55	.15	

(Table continues)

Table 4.1 (continued)

Scale	Item	5	7	28	33
Laissez Faire	5				
	7	.55			
	28	.54	.45		
	33	.44	.41	.46	

Table 4.2

Mean Inter-Item Correlations among MLQ Subscales

	IIA	IIB	INSP	IS	IC	CR	MBEA	MBEP	LF
IIA	.62								
IIB	.55	.53							
INSP	.59	.54	.68						
IS	.54	.45	.50	.55					
IC	.51	.42	.48	.48	.45				
CR	.58	.50	.53	.50	.48	.52			
MBEA	-.16	-.06	-.15	-.12	-.12	-.09	.45		
MBEP	-.26	-.23	-.21	-.22	-.20	-.23	.10	.30	
LF	-.37	-.33	-.30	-.31	-.33	-.34	.12	.35	.48

Note. IIA = Idealized Influence Attributed; IIB = Idealized Influence Behavior; INSP = Inspirational Leadership; IS = Intellectual Stimulation; IC = Individual Consideration; CR = Contingent Reward; MBEA = Management by Exception Active; MBEP = Management by Exception Passive; LF = Laissez-Faire.

The EFA on the MLQ was conducted through SPSS with maximum likelihood extraction, and a direct oblimin rotation with a delta value of zero. An Eigen-value of >1 was used to extract the number of factors. Five factors emerged accounting for 55.71% of the total variance with $\chi^2(461) = 1057.485, p < 0.01$. The initial EFA pattern matrix is depicted in Table 4.3. It was noted that the first factor consisted of items from the *transformational* scales, as well as the *Contingent Reward* scale; the second factor consisted of *Management by Exception Active* items; the third factor included items from both the *Management by Exception Passive* and *Laissez-Faire* subscales; and the fourth factor consisted of the remaining transformational and

contingent reward items. As would be expected the first and fourth factors were highly correlated ($r = .67$).

Table 4.3

Pattern Coefficients for Initial MLQ Exploratory Factor Analysis

Item	Factor			
	1	2	3	4
26	.92			
9	.77			
13	.75			
36	.74			
34	.71			
25	.66			
14	.62		-.21	
23	.50			.22
35	.49			.34
16	.46		-.22	.21
6	.46			
18	.44			.38
24		.76		
27		.74		
4		.63		
22		.55		
3			.76	
5			.76	
12			.72	
28			.70	
20			.63	
7			.58	
33			.54	
30				.67
31			-.23	.61
32	.25			.60
1			-.25	.59
19				.59
10	.32			.56

(Table continues)

Table 4.3 (continued)

Item	Factor			
	1	2	3	4
21	.26			.52
2				.50
29				.48
8	.21			.38
15	.31		-.30	.35
11	.31	.23		.32

Items were deleted from the MLQ questionnaire based on several criteria. First, Henson and Roberts (2006), in a review of studies using EFA, found a loading of .40 was most typically used as a cutoff for a meaningful loading; as such this criterion was used herein. Next, items which loaded on two or more factors were considered for removal. Finally, the content of items was reviewed to ensure the resultant structure made sense according to theory. Items 8, 11, and 15 were first deleted as they all had loadings below .40, and cross loaded on multiple factors. Subsequently items that loaded on multiple factors, specifically the first and fourth factors, were deleted. These items included items 1, 2, 10, 16, 18, 19, 21, 23, 29, 30, 31, 32, and 35.

After removing the items noted, the data were submitted to an EFA. As a result the fourth factor, which initially accounted for only 2.72% of the variance fell out, and a final 3-factor model emerged depicted in table 4.4. This model accounted for 53.23% of the total variance with $\chi^2(117) = 255.86, p < 0.01$. The first factor included items from the transformational leadership scales and was named *Transformational Leadership-Coach* (TLC; $\alpha = .91$). The second factor consisted of *Management by Exception Passive* items and *Laissez-Faire* items and was named *Avoidant Coach* (AC; $\alpha = .86$). Finally, the third factor included the four *Management by Exception Active* items, and was subsequently named *Management by Exception Active Coach* (MBEAC; $\alpha = .77$).

Table 4.4

Pattern Coefficients and Reliability for Revised MLQ scales

Scale	Item	1	Factor 2	3
Transformational	26	.91		
Leadership Coach	36	.81		
$\alpha = .91$	9	.80		
	13	.80		
	34	.72		
	14	.67		
	25	.63		
	6	.44		
Avoidant Coach	5		.78	
$\alpha = .86$	3		.75	
	12		.72	
	28		.69	
	7		.64	
	20		.64	
	33		.53	
Management by	27			-.74
Exception- Active	24			-.72
Coach	4			-.61
$\alpha = .77$	22			-.55

The inter-item correlations within the revised scales (see table 4.5), and the mean inter-item correlations among scales (see table 4.6) were then examined to provide further evidence of internal consistency reliability and discriminant validity of the revised MLQ. The mean correlations within scales ranged between .45 and .56, and the mean correlation between scales ranged from -.13 - .32. The corrected correlations (r 's = .26 - .62) among these scales were all well below the .85 threshold indicating discriminant validity. In addition, the correlations between the TLC subscale and the other two subscales are negative. Considering these two

scales are transactional in nature, this negative relationship with the global transformational scale fits Bass and Riggio's (2006) Full Range of Leadership framework.

It is encouraging to find that the EFA solution created a global measure of transformational leadership. Researchers often combine these scales into a global measure of transformational leadership without first testing if the items do indeed converge. It should be noted that none of the original *Contingent Reward* items were retained by the final EFA. *Contingent Reward* is often found to be highly correlated with transformational leadership (Avolio & Bass, 2004), thus, it is possible that with this population these items were too highly related to the transformational items. Somewhat different from previous studies is the combination of the *Management by Exception-Passive* and *Laissez Faire* subscales into one *Avoidant Coach* subscale. This is theoretically justified though, as Full Range of Leadership theory predicts that these two original subscales are the least effective, and reflect the least active leadership behavior. Overall, it appears the revised MLQ is supported by existing transformational leadership theory.

Similar to the MLQ discussed above, a reliability analysis was performed on the proposed structure of the TMLQ yielding reliability coefficients ranging from .66 - .85. Each scale's inter-item correlation matrix was examined (see Table 4.7), and the mean inter-item correlation among scales computed (see Table 4.8). In general, the items within scales correlated moderately-highly, though some items appeared to not fit well. Item 28 of the *Intellectual Stimulation* subscale had very low correlations with the other items within the scale. In addition, reliability analysis indicated that the deletion of this item would increase the subscales reliability coefficient from .68 to .78. From the *Management by Exception Active* subscale, item 23 correlated low with the other subscale items. The deletion of this item was found to improve the

subscale's reliability coefficient from .66 to .70. Similarly, item 41 from the *Management by Exception Passive* subscale had low inter-scale inter-item correlations. The deletion of this item would improve the subscales internal consistency reliability from .70 to .77. Finally, item 1 from the *Laissez-Faire* subscale had correlations all below .14 with other items within the subscale. If this item was deleted, the reliability coefficient would have increased from .60 to .74.

Considering this information, it was decided that these four items be deleted from further analysis.

Table 4.5

Inter-Item Correlations within Revised MLQ Subscales

Scale	Item	26	36	9	13	34	14	25	6
Transformational Leadership Coach	26								
	36	.74							
	9	.68	.61						
	13	.69	.69	.63					
	34	.69	.65	.50	.58				
	14	.64	.67	.47	.67	.68			
	25	.66	.57	.40	.51	.61	.55		
	6	.42	.39	.36	.36	.46	.45	.44	
		5	3	12	28	7	20	33	
Avoidant Coach	5								
	3	.59							
	12	.61	.62						
	28	.53	.45	.54					
	7	.55	.41	.49	.44				
	20	.49	.46	.56	.43	.41			
	33	.43	.37	.38	.45	.40	.35		
MBEAC		27	24	4	22				
		27							
		24	.60						
		4	.54	.49					
		22	.37	.34	.36				

Table 4.6

Mean Inter-Item Correlations among Revised MLQ Subscales

	TLC	AC	MBEAC
Transformational Leadership Coach	.56		
Avoidant Coach	-.32	.47	
Management by Exception Coach	-.13	.15	.45

Table 4.7

Inter-Item Correlations within TMLQ Subscales

Scale	Item	2	12	22	32	42
Idealized	2					
Influence-Attributed	12	.50				
	22	.44	.46			
	32	.57	.62	.53		
	42	.46	.56	.53	.68	
Scale	Item	4	14	24	34	44
Idealized	4					
Influence-Behavior	14	.40				
	24	.44	.38			
	34	.43	.29	.45		
	44	.46	.38	.54	.47	
Scale	Item	6	16	26	36	46
Inspirational Leadership	6					
	16	.44				
	26	.38	.50			
	36	.42	.58	.59		
	46	.46	.58	.62	.63	
Scale	Item	8	18	28	38	47
Intellectual Stimulation	8					
	18	.37				
	28	-.02	.08			
	38	.35	.57	.04		
	47	.37	.55	.01	.64	
Scale	Item	10	20	30	40	48
Individual Consideration	10					
	20	.57				
	30	.39	.52			
	40	.43	.48	.43		
	48	.54	.64	.60	.54	

(Table continues)

Table 4.7 (continued)

Scale	Item	7	15	25	35	45
Contingent Reward	7					
	15	.51				
	25	.51	.56			
	35	.41	.50	.52		
	45	.43	.42	.51	.49	
Scale	Item	3	11	21	31	41
Management by Exception Passive	3					
	11	.49				
	21	.32	.27			
	31	.57	.63	.41		
	41	.11	.14	.05	.15	
Scale	Item	1	9	19	29	39
Laissez Fair	1					
	9	.14				
	19	-.04	.32			
	29	-.08	.41	.46		
	39	-.10	.38	.48	.47	

Table 4.8

Mean Inter-Item Correlations among TMLQ Subscales

	IIA	IIB	INSP	IS	IC	CR	MBEA	MBEP	LF
IIA	.53								
IIB	.45	.42							
INSP	.50	.46	.52						
IS	.33	.32	.33	.29					
IC	.50	.45	.48	.36	.51				
CR	.49	.47	.50	.35	.50	.49			
MBEA	-.11	-.02	-.08	.02	-.10	-.02	.27		
MBEP	-.29	-.23	-.26	-.15	-.27	-.24	.19	.32	
LF	-.22	-.20	-.22	-.12	-.24	-.22	.08	.24	.24

With close examination of the mean inter-item correlations among scales, a similar picture was revealed as was indicated with the original MLQ instrument described above.

Corrected correlations were calculated between the scales revealing that all transformational scales had corrected correlations equal to or above the .85 threshold. This was true as well when

comparing the transformational scales with the *Contingent Reward* subscale. These high correlations indicate a lack of discriminant validity suggesting these subscales are not measuring the theoretically different types of transformational leadership. The *Management by Exception Active*, *Management by Exception Passive*, and *Laissez-Faire* subscales had lower correlations, but the corrected correlation between *Management by Exception Passive* and *Laissez-Faire* was calculated to be .86. It appears these two scales, which both measure a theoretically less effective leadership, also do not discriminate. There is far less literature describing the TMLQ, but this result is logical considering its scale structure is identical to the MLQ. Given this, the TMLQ was submitted to the same EFA procedure applied to the MLQ.

Five factors emerged from the initial EFA on the TMLQ items accounting for 51.06% of the total variance with $\chi^2(625) = 1153.94, p < 0.01$. The initial EFA pattern matrix including the percent variance explained by each factor is depicted in Table 4.9. Note that the first factor consists almost entirely of items from the *transformational leadership* scales as well as items from the *Contingent Reward* subscale. The second factor consists of items from the *Management by Exception Active* subscale as well as item 21 from the *Management by Exception Passive* subscale. The third subscale includes *Management by Exception Passive* items as well as *Laissez-Faire* subscale items. The fourth factor was also a combination of transformational items, but many of the loadings on this subscale were below the .40 cutoff, and cross loaded with items within the first factor. Finally, the fifth factor had no logical theme, and contained only items with low loadings and hence was not considered viable. In fact, with the deletion of items 3, 4, and 14, all of which had very low loadings across two factors, the fifth factor was no longer extracted. Following this, items 6, 8, 22, 26, 32, 42, and 44 were all deleted with low loadings and/or cross loadings between the first and fourth factors. As a result of this iterative process a

final 3-factor model emerged accounting for 49.28% of the variance with $\chi^2(403) = 919.40$, $p < 0.01$. The first factor had a reliability coefficient of .96, and was named *Transformational Leadership Team* (TLT). The second factor was labeled *Management by Exception Active Team* (MBEAT), and its reliability coefficient was .74. The final third factor had a reliability coefficient of .83, and considering it included both *Management by Exception Passive* items and *Laissez-Faire* items was named *Avoidant Team* (AT).

Table 4.9

Pattern Coefficients for initial TMLQ Exploratory Factor Analysis

Item	1	2	Factor 3	4	5
47	.74				
8	.74				
38	.68				
30	.63				
48	.62			-.22	-.26
20	.61				
8	.60				
15	.59				
25	.56				
12	.56				
10	.53				
7	.52				
34	.50				
32	.49	-.24		-.28	
40	.49			-.26	
24	.49			-.21	
2	.43				.24
16	.40			-.33	
35	.36			-.33	
14	.33	.20			
13		.73			
33		.68			

(Table continues)

Table 4.9 (continued)

Item	Factor				
	1	2	3	4	5
43		.52			
5		.48			
21		.46			
29			.68		
11			.67		-.22
39			.62		
19			.60		
9			.59		
31	-.21	.22	.55		
3			.39		-.33
46				-.83	
45				-.71	
44				-.65	
26			-.20	-.58	
42	.30	-.23		-.49	
36	.30			-.47	
6				-.41	.35
22				-.40	
4	.34				.38

Table 4.10

Pattern Coefficients and Reliability for revised TMLQ Subscales

Scale	Item	Factor		
		1	2	3
Transformational Team	46	.80		
Leadership	47	.77		
$\alpha = .96$	38	.77		
	48	.76		
	45	.75		
	36	.75		
	16	.75		
	32	.74		
	18	.72		
	40	.72		
	25	.71		
	20	.71		

(Table continues)

Table 4.10 (continued)

Scale	Item	Factor		
		1	2	3
Transformational Team Leadership (continued)	34	.70		
	35	.69		
	24	.69		
	15	.62		
	30	.60		
	12	.60		
	7	.56		
	2	.55		
	10	.50		
Management by Exception	13		.73	
Active Team Leadership	33		.69	
$\alpha = .74$	43		.51	
	21		.48	
	5		.44	
Avoidant Team Leadership	11			.73
$\alpha = .83$	29			.72
	31			.60
	9			.59
	39			.58
	19			.57

The pattern matrix including all factor loadings for the revised TMLQ is depicted in Table 4.10. The within scale inter-item correlation matrices shown in Table 4.11 were examined to further ensure consistency within scales. The TLT subscale inter-item correlations ranged from .35 to .72. The inter-item correlations for the MBEAT scale ranged from .22 to .53. It was noted that item 21 produced low inter-item correlations with item 5, but the removal of this item would decrease the scale's reliability, leading to a decision to retain the item. The AT subscale inter-item correlations ranged from .32 to .63. The between scale mean inter-item correlation matrix (Table 4.12) showed a similar pattern as the revised MLQ. The calculated corrected

correlations between subscales ranged from .29 to .70; all below the .85 threshold. This result indicated the revised TMLQ shared an accepted discriminant validity.

The EFA of the TMLQ yielded the same factor structure as the MLQ. This is not surprising considering the items of the TMLQ were developed via considering the Full Range of Leadership model, and also utilized MLQ items as a source of information. As predicted by the Full Range of Leadership framework, one global measure of transformational leadership negatively correlated with two transactional subscales. Also, the *Management by Exception Passive* and *Laissez-Faire* subscales from the original TMLQ combined into one for the revised version. In this case there is precedent for this result, as Sivasubramaniam, Murry, and Garger (2003) suggested an alternate solution for the TMLQ combining these scales into an *Avoidant Leadership Scale*. Ultimately, while the revised TMLQ does not differentiate between different types of transformational leadership, it still follows transformational leadership theory closely.

Table 4.11

Inter-Item Correlations within Revised TMLQ Subscales

Scale	Item	46	47	38	48	45	36	16	32	18	40	25
Transformational Leadership Team	46											
	47	.53										
	38	.53	.64									
	48	.61	.67	.61								
	45	.72	.50	.46	.59							
	36	.65	.53	.58	.65	.57						
	16	.59	.50	.57	.57	.51	.58					
	32	.59	.53	.55	.64	.59	.61	.54				
	18	.48	.56	.56	.56	.43	.48	.58	.50			
	40	.46	.47	.48	.54	.53	.47	.43	.60	.42		
	25	.52	.48	.54	.60	.52	.54	.57	.58	.53	.50	

(Table continues)

Table 4.11 (continued)

		20	34	24	15	30	12	7	2	10	35
Transformational Leadership Team (continued)	20										
	34	.53									
	24	.57	.45								
	15	.56	.47	.52							
	30	.52	.38	.46	.44						
	12	.56	.41	.49	.54	.45					
	7	.55	.43	.43	.52	.40	.49				
	2	.53	.45	.38	.48	.35	.49	.42			
	10	.57	.41	.40	.54	.40	.57	.52	.47		
	35	.52	.55	.45	.50	.40	.37	.42	.42	.37	
		13	33	43	21	5					
Management by Exception Active Team	13										
	33	.53									
	43	.33	.45								
	21	.34	.46	.39							
	5	.33	.29	.28	.22						
		11	29	31	9	39	19				
Avoidant Team	11										
	29	.49									
	31	.63	.55								
	9	.47	.41	.33							
	39	.39	.47	.42	.39						
	19	.45	.47	.42	.32	.48					

Table 4.12

Mean Inter-Item Correlations among the Revised TMLQ Subscales

	TLT	MBEAT	AT
TLT	.50		
MBEAT	-.12	.36	
AT	-.33	.19	.45

With both leadership variables examined, attention was turned to the GEQ instrument, which measures cohesion. Internal reliabilities for the GEQ subscales were as follows: Group Integration-Task (GIT) = .78; Group Integration-Social (GIS) = .81; Attraction to Group-Task (ATGT) = .72; and Attraction to Group-Social (ATGS) = .71. These reliability coefficients are consistent with prior research using the GEQ (Carron, Brawley, & Widmeyer, 1998), but considering the additional scrutiny given to the other measures, it was determined that the structure of the GEQ should be looked at more closely. For this purpose, the mean item correlations among subscales (Table 4.13) and inter-item correlations within subscales (Table 4.14) were examined. Items 2, 5, and 12 were observed as items with multiple low correlations with items within the same subscale. In the case of item 2, deletion would increase the ATGT subscale reliability coefficient from .72 to .75. In contrast, deletion of items 5 and 12 was found to actually decrease the reliability coefficients of the ATGS and GIT subscales by .03 and .02, respectively. Given these potential decreases were minor, these two items along with item 2 were deleted from further analysis. Though a widely used instrument, the GEQ has received some criticism for typically low internal reliability (Carron, Brawley, & Widmeyer, 1998). Considering this, and the still low internal reliabilities with the data here, it was determined that an EFA should be run to potentially improve the measurement of the GEQ.

Table 4.13

Mean inter-item correlations among GEQ sub-scales

	1	2	3	4
1. Group Integration Task	.42			
2. Group Integration Social	.34	.53		
3. Attractiveness to Group Task	.31	.22	.41	
4. Attractiveness to Group Social	.23	.32	.24	.33

Table 4.14

Inter-item correlations within GEQ subscales

Scale	Item	10	12	16	14	18
GIT	10					
	12	.46				
	16	.62	.54			
	14	.49	.23	.37		
	18	.35	.27	.41	.41	
Scale	Item	15	11	13	17	
GIS	15					
	11	.43				
	13	.44	.51			
	17	.53	.59	.64		
Scale	Item	2	4	6	8	
ATGT	2					
	4	.09				
	6	.57	.67			
	8	.27	.58	.59		
Scale	Item	5	9	1	3	7
ATGS	5					
	9	.47				
	1	.29	.34			
	3	.19	.26	.37		
	7	.25	.38	.43	.30	

An initial EFA extracted 3 factors accounting for 48.09% of the variance with $\chi^2(63) = 275.61, p < 0.01$. The initial pattern matrix diagram is shown in Table 4.15. To delete poor items, the same iterative process was used as described with the MLQ. Items 18 and 14 were first deleted considering low loadings that also crossed among two factors. The EFA with these items deleted resulted in a similar 3-factor model, but item 3 loaded .22 on the first factor, and -.32 on the second factor. The deletion of this item resulted in a 2-factor model. The items with the highest loadings on the first factor were social cohesion related, while the items with the highest loadings on the second factor were related to task cohesion. Subsequently, items cross loading

between the factors were deleted resulting in a final 2-factor model accounting for 52.34% of the variance with $\chi^2(19) = 146.80, p < 0.01$.

Table 4.15

Pattern Coefficients for initial GEQ Exploratory Factor Analysis

Item	1	Factor 2	3
17	.81		
13	.75		
15	.65	-.27	
11	.61		
7	.45		.38
9	.44		
18	.30	-.25	
10		-.84	
4		-.55	.34
16	.38	-.53	
14	.24	-.35	
8		-.39	.68
6			.62
1	.20		.46
3			.44

The revised GEQ pattern loadings are depicted in table 4.16. Note that given the structure of the final EFA, the first factor was labeled *Task Cohesion* (TC; $\alpha = .81$), and the second factor *Social Cohesion* (SC; $\alpha = .80$). Further evaluation was made by examining final within scales inter-item correlation matrices (see Table 4.17). The range of inter-item correlations for task cohesion was .44 - .64, and for social cohesion .41 - .64. The mean inter-item correlation matrix among subscales of the revised GEQ is displayed in Table 4.18. Utilizing this information, a corrected correlation between the two scales was calculated to be .56, indicating the scales discriminate appropriately.

Table 4.16

Pattern Coefficients and Reliability for revised GEQ subscales

Scale	Item	Factor	
		1	2
Task Cohesion $\alpha = .81$	17	-.84	
	13	-.81	
	11	-.65	
	7	.54	
Social Cohesion $\alpha = .80$	8		.79
	4		.77
	10		.76
	16		.56
	6		.45

Table 4.17

Inter-Item Correlations within Revised GEQ Subscales

Scale	Item	8	4	10	16	6
Social Cohesion	8					
	4	.58				
	10	.56	.57			
	16	.48	.37	.62		
	6	.57	.37	.37	.39	
		7	13	11	17	
Task Cohesion	7					
	13	.44				
	11	.47	.51			
	17	.47	.64	.59		

Table 4.18

Mean Inter-and Intra Items' Correlations among Revised GEQ Subscales

	Task Cohesion	Social Cohesion
Task Cohesion	.52	
Social Cohesion	.28	.49

Carron, Brawley and Widmeyer (1998) discussed three primary assumptions which underlie the conceptual model of the original GEQ. The revised instrument meets two of these three assumptions. First, and most simply, the assumption that cohesion can be assessed through the perceptions of individual group members remains unchanged by the modification of instrument structure. Second, it was an encouraging finding that the EFA extracted items into a social and task dimension. This meets the assumption that group members have both a group orientation to attain goals and also an orientation toward social relationships. The third assumption is that individuals have perceptions of how the group works together in totality as well as perceptions about how the group meets personal needs. While all the items retained do represent either this *Group Integration* or *Individual Attractions to Group* concept, the revised two factor model did not distinguish these as subscales. In other words, authors utilizing the results of the revised GEQ must consider the general social and task aspects of cohesion without knowing if these perceptions are regarding the individual or the group. Many theoretical frameworks, including Zaccaro et al.'s (2001) functional team leadership model, consider task and social aspects of cohesion in general. The revised GEQ meets the needs of this model in this regard.

The final instrument for evaluation was the TOQ. First, examination of the data showed that 12.3% of the participants who completed the TOQ skipped item 7. The mean of item 7 ($M = 2.89$) fell within the range of means of other TOQ items ($M = 2.67 - 3.72$), and though it had the highest standard deviation ($SD = 1.19$) of all items on the scale, it was only marginally higher than the next highest ($SD = 1.17$). When comparing mean and SDs of the TOQ for those who did complete item 7 ($N = 434$, $M = 3.00$, $SD = .65$), and those who did not complete item 7 ($N = 52$, $M = 3.01$, $SD = .60$) a very small difference was found. Moreover, t-tests were conducted to find

out if participants answered the other items on the TOQ differently depending on whether they completed item 7 or not. All tests proved insignificant differences, indicating that the data were missing completely at random (Peugh & Enders, 2004).

Table 4.19

Inter-Item Correlations within TOQ Subscales.

Scale	Item	1	3	5	7	8
Outcome	1					
	3	.46				
	5	.23	.38			
	7	.63	.47	.28		
	8	.44	.47	.46		
Scale	Item	2	4	6	9	
Process	2					
	4	.49				
	6	.50	.64			
	9	.43	.69	.63		

Table 4.20

Mean Inter-and Intra Items' Correlations among TOQ Subscales

	Process	Outcome
Process	.56	
Outcome	.49	.44

The within inter-item correlation matrices are depicted in Table 4.19. Note that item 5 had correlations below .30 with items 3 and 7. In addition, the deletion of this item would increase the *Outcome* subscale reliability coefficient from .79 to .80. As a result it was determined this item was poor, and it was deleted from further analysis. The between scale mean inter-item correlation matrix is displayed in Table 4.20. Utilizing these inter- and intra-item correlations a corrected correlation of .99 was calculated suggesting that the two hypothesized

subscales were essentially measuring the same construct. Given this, and the fact that the TOQ had never been empirically tested, an EFA was conducted to examine the instruments structure.

Table 4.21

Exploratory Factor Analysis Path Coefficients for the TOQ

Scale	Item	λ
Team Outcomes $\alpha = .90$	4	.86
	9	.84
	6	.75
	3	.75
	8	.74
	7	.70
	1	.66
	2	.57
% Variance		54.48

Table 4.22

Inter-Item Correlation Matrix for the Revised TOQ

Item	1	2	3	4	6	7	8	9
1								
2	.30							
3	.46	.52						
4	.55	.50	.70					
6	.44	.50	.60	.64				
7	.63	.32	.46	.58	.46			
8	.45	.46	.48	.62	.58	.53		
9	.59	.43	.59	.70	.64	.63	.66	

It was not surprising given the high correlation of items between scales that the EFA resulted in only a 1-factor model accounting for 54.48% of the variance with $\chi^2(20) = 141.17, p < 0.01$. The path coefficients for the TOQ are depicted in Table 4.21 and range from .57 to .86.

The inter-item correlation matrix for the revised TOQ is shown in Table 4.22. The range of inter-item correlations was .30 - .70 with a mean of .53.

The descriptive statistics for each of the revised instruments are displayed in Table 4.23. Note that all the reliability coefficients are above .74 with most scales above .80. The skewness of the data in all cases is below 1.10 in either direction. Finally, the correlations among the model's scales are shown in Table 4.24. It is noteworthy that the transactional leadership scales have negative correlations with all other scales as would be predicted by Full Range of Leadership Theory. Also, a high correlation between Transformational Team Leadership and Social Cohesion ($r = .72$) was observed. While correlations this high may not be uncommon among indicator variables, Grewal, Cote, and Baumgartner, (2004) argued that correlations between .6 and .8 combined with low reliability and high measurement error can result in more likely Type II error in Structural Equation Modeling.

The scales in Table 4.23 are composite scores. To adjust for measurement error in the subscales for the structural equation modeling analysis, these were transformed into true scores (Hayduk, 1987). A participant's true score for a variable was computed by calculating the item mean for a subscale, and then multiplying it by the square root of the alpha coefficient of that subscale. In addition, the *Management by Exception Active* and *Avoidant* subscales were reverse scored for the structural equation modeling process.

Kline (2005) explains that if the measurement properties of the instruments used in a SEM are poor, the de-facto result is that the SEM measurement model will also be poor. Specifically, one must attend to issues with missing data, multi-collinearity, score reliability, and validity. The data screening described previously was conducted with this specifically in mind. Considering each of the instruments required some significant modification, this process came at

some cost. It should be kept in mind that the same data used to modify these instruments was used to conduct the SEM, and the limitation and future implications of this process are discussed in more detail in the discussion section of this paper.

Table 4.23

Descriptive Statistics for Instruments used in the Model

Variable	Scale	<i>M</i>	<i>SD</i>	Possible Range	Skewness	Kurtosis	α
Coach	TC	4.00	.73	1-5	-1.08	.97	.91
Leadership	MBEAC	1.92	.82	1-5	1.01	.52	.77
	AC	3.24	.95	1-5	-.28	-.46	.86
Team	TT	3.67	.71	1-5	-.43	-.29	.96
Leadership	MBEAT	2.99	.75	1-5	-.04	-.29	.74
	AT	2.41	.74	1-5	.29	-.23	.83
Cohesion	TC	6.87	1.83	1-9	-1.07	.72	.81
	SC	6.98	1.76	1-9	-.96	.49	.80
Outcome		3.37	.73	1-5	-.35	.28	.90

Table 4.24

Correlations among Scales in the Model

	TLC	MBEAC	AC	TLT	MBEAT	AT	TC	SC	Outcome
TLC	1								
AC	-.09	1							
MBEAC	-.47	.29	1						
TLT	.51	-.23	-.45	1					
MBEAT	-.10	.50	.23	-.22	1				
AT	-.35	.31	.53	-.61	.38	1			
TC	.20	-.12	-.29	.42	-.18	-.34	1		
SC	.46	-.24	-.50	.72	-.28	-.53	.45	1	
Outcome	.38	-.21	-.34	.52	-.20	-.41	.24	.62	1

Single-Level Structural Equation Model

To provide initial support for the study's hypotheses, the data were subjected to a two-step structural equation modeling process using latent variables suggested by Anderson and Gerbing (1988). The first step is to test a measurement model allowing all latent variables to be correlated. With confirmation of sound measurement, the second step specifies and tests the theoretical structural model. Note that because the goal achievement latent variable had only one indicator variable, the error variance of the TOQ was fixed to 0 in order for the model to be identified. Considering the TOQ was calculated using true scores, this error variance was deemed appropriate.

Figure 4.1. Hypothesized measurement model and standardized coefficients.

The hypothesized measurement model (Figure 4.1) was found to have less than acceptable fit, $\chi^2 (22) = 248.699$, $p < 0.01$, RMSEA = .14, CFI = .86. Close examination of the path diagram revealed that in both cases of *Coach Leadership* and *Team Leadership*, the *Management by Exception Active* observed variable was loading quite low ($< .40$) compared to the other indicators. Modification indices suggested that the correlation of error terms between the MBEAC and MBEAT variables would significantly improve the model. In addition, a high correlation ($r = .86$) between Coach Leadership and Team Leadership was detected showing that the two independent variables were highly related.

To resolve the lack of fit in the measurement model, theoretically sound alternatives were considered. First, it was noted that the structure of both the MLQ and TMLQ instruments both before and after EFA were identical, and represent the Full Range of Leadership theory as described by Bass and Riggio (2006). According to these authors, leaders should exhibit all leadership behaviors, but transformational leadership behavior should be used most frequently followed in descending order of frequency by *Contingent Reward*, *Management by Exception Active*, *Management by Exception Passive*, and *Laissez-Faire*. The resultant structures of the MLQ and TMLQ combined *Contingent Reward* into the transformational leadership subscale, and also combined *Management by Exception Passive* and *Laissez-Faire* subscales into an *Avoidant Leadership* subscale. The data, as well as Full Range of Leadership theory, appeared to suggest that each of these subscales represented a different leadership style exhibited by the collective athletes on the team as well as the coach. As a result, an alternative measurement model was tested, which hypothesized the three leadership styles (*Transformational Leadership*, *Management by Exception Active*, and *Avoidant Leadership*) would influence perceptions of cohesion. Each of these leadership styles were hypothesized latent variables indicated by the

coach and team leadership subscale corresponding to it. The alternative measurement model is depicted in Figure 4.2.

Figure 4.2. Revised measurement model and standardized coefficients.

The fit indices for the alternative measurement model were, $\chi^2 (18) = 97.018$, $p < 0.01$, RMSEA = .092, CFI = .95. The χ^2 indicated that the data does not fit the model and the RMSEA was above the minimum criteria of .08 for reasonable fit. Alternatively, the CFI of .95 met Hu and Bentler's (1999) standard of good fit. All the factor loadings within the measurement model were above .49 with only the task component of cohesion minimally below Hair et al.'s (1998) suggested .50 threshold of practical significance. The correlations among latent variables are

moderate except those between Transformational Leadership and Cohesion ($r = .88$). Kline (2005) suggested that high correlations ($> .85$) can cause instability in SEM. *Transformational Leadership* would be expected to correlate highly with *Cohesion*, still the magnitude is alarming.

With no other theoretically sound means to improve the model, the alternative structural model was then tested (see Figure 4.3). Values of the selected fit indices were, $\chi^2 (21) = 97.54$, $p < 0.01$, RMSEA = .084, CFI = .95. Like the measurement model, the χ^2 statistic was higher than desirable. Overall, this model demonstrated reasonable fit. To evaluate the fit of the structural part of the model, a χ^2 difference test was conducted resulting in a non significant test statistic, .52 (3), $p > .10$. This suggested the structural part of the model fit the data well. The observed RMSEA did not meet the accepted standard of .08, but was better than that of the measurement model. The CFI equal to Hu and Bentler's (1999) threshold of .95 suggested model fit.

Although the data necessitated revision to the original hypothesized model, the basic assumptions underlying it remained unchanged. First, while the leadership instruments were adjusted, the subscales indicating the leadership latent variables still represented the Full Range of Leadership Model. Second, the input-process-output aspect of functional leadership theory remained unchanged. Considering this, the first and second original hypotheses could still be evaluated. The first hypothesis stated that head coach and athlete leadership would positively affect team cohesion. The standardized coefficients reported in Table 4.25 indicate that *Transformational Leadership* by the head coach and collective team significantly affects team *Cohesion*. More specifically, as the perception of *Transformational Leadership* increases by one standard deviation, the perception of team *Cohesion* increases by .96 of a SD. Management by Exception Active was observed to influence the perception of cohesion to a small extent. *Avoidant Leadership* actually indicated a small negative effect on cohesion. One possible

explanation for this is that because *Transformational Leadership* and *Avoidant Leadership* were highly correlated ($r = .84$) a case of negative suppression occurred. This arises when the predictor variables are correlated with each other, as well as the outcome variable (Klein, 2005). Finally, the results indicated that 81% of the variance of *Cohesion* was accounted for by the different leadership styles.

Figure 4.3. Structural model and standardized path coefficients.

Table 4.25

Standardized Direct and Indirect Effects of the Structural Model.

Outcome	Determinant	Standardized effects	
		Direct	Indirect
Cohesion ($r^2=.81$)	Transformational Leadership	.96*	
	Management by Exception Active	.16	
	Avoidant Leadership	-.14	
Goal Achievement ($r^2=.44$)	Cohesion	.67*	
	Transformational Leadership		.64*
	Management by Exception Active		.10
	Avoidant Leadership		.10

* $p < .01$

The second hypothesis that *Cohesion* positively affects *Goal Achievement* was somewhat clearer. The standardized path coefficient of .67 indicated that perceptions of cohesion indeed significantly and positively influence the perception of team *Goal Achievement*. The results suggest, more specifically, that a one standard deviation increase in *Cohesion* would increase the perception of *Goal Achievement* by .67 *SD*. In addition, 44% of the variance of *Goal Achievement* was accounted for by the team's cohesion. It should also be noted that *Transformational Leadership* had a significant indirect effect of .64 on *Goal Achievement*.

Considering the modification of the structural model, it was difficult to appropriately evaluate the third hypothesis that head coach and collective team leadership were correlated and add to each others' account variance of team cohesion. The first part of the hypothesis proved true as coach and team leadership were highly correlated ($r = .86$) in the original measurement model. Unfortunately, the second part of the hypothesis was impossible to determine with the revised structure. In lieu of this, the new structure did make it possible to explore Bass and Riggio's (2005) proposition of the augmentation effect. As depicted in Table 4.26, *Transformational Leadership* accounted for more cohesion variance than either *Management by Exception Active* or *Avoidant Leadership*. The overall model's accounted variance of *Cohesion* is

also greater than the account variance for any of the individual leadership styles alone. Together this suggests that *Transformational Leadership* is most important to an athlete's perception of cohesion, but transactional leadership styles also contribute uniquely to this perception.

To provide more descriptive evidence and account for the nesting effect within teams, the revised structural model was also examined via multi-level structural equation modeling. The multi-level analysis was performed with Full Information Maximum Likelihood Equation Modeling using LISREL software. The resultant fit indices did not support model fit, $\chi^2(45) = 147.45$, $p < 0.01$, RMSEA = .096. While it is always good to have a high number of participants in SEM, when conducting multi-level analysis it is very important to have balanced group sizes (Hox, Mass, & Brinkhuis, 2010). Due to the fact that not every player on a team participated in the study, fairly unbalanced teams emerged which may be contributing to the poor fit indices. Considering the less than acceptable fit, path coefficients for the between team and within team models were not evaluated.

Table 4.26

Correlation and Account Variance between Independent Variables and Cohesion

Variable	r	r ²
Transformational Leadership	.89	.79
Management by Exception Active	.39	.15
Avoidant Leadership	.76	.58
Overall Model		.88

CHAPTER 5

DISCUSSION

In a changing world with complex problems there is much interest in leadership and its effect on teams' behaviors and productivity. Bookstore shelves are filled with volumes claiming to have the latest secret to developing great organizational leadership. This interest is reflected also in the world of sport where coaches are hired and fired based on how well they develop their athletes and ultimately prepare them for victory.

Thirty years after its inception, the tenets of Chelladurai's (1978) Multidimensional Model of Leadership (MML) are still predominant in sport psychology. The MML has been an important contributor to investigations of the coach-athlete relationship and in examinations of the different components of leadership (i.e., autocratic behavior, training and instruction). Smith, Smoll, and Cumming (2007) have extended the research on Coach Effectiveness Training to a new Mastery Approach to Coaching (MAC) hoping to create a positive motivational environment for youth athletes. Still, no consensus exists in the world of sport for a model that can best describe how leaders can develop effective teams.

Many advances in Industrial/Organizational Psychology center on the Full Range of Leadership Theory, which comprises transformational and transactional leadership. Sport psychology has begun to embrace the potential examination of transformational leadership and its relationship to several variables including motivation (Arthur, Woodman, Wei Ong, Hardy, & Ntoumanis, 2011), and cohesion (Callow et al., 2009). In addition, functional leadership theory, which describes leadership as a social problem solving in complex, novel, and often ambiguous situations, has been used to describe leadership's effect on teams (Zaccaro et al., 2001). Jones and Wallace (2005) have encouraged researchers to reconsider the complexity and ambiguity of

the athletic process, perhaps giving reason to believe that functional leadership theory may fit the domain of sport well. The purpose of this study was to provide a new framework of team leadership in sport. More specifically, the aim was to examine a functional leadership paradigm in sport where the “full range of leadership” behaviors by the coach and by the collective athletes influence team cohesion, and thereby increases the likelihood of team goal achievement.

Discussion of Results

The theoretical model examined in this study is based on Zaccaro et al.’s (2001) functional leadership paradigm, and Bass’s (1985) Full Range of Leadership Model. Using this foundation, data were gathered to test the fit of the model and several hypotheses were proposed. The first hypothesis was that the “full range of leadership” behavior by coaches and by the collective athletes on a team would be positively associated with team cohesion. Second, it was hypothesized that cohesion had a moderate and positive association with team goal achievement. Finally, the fourth hypothesis maintained that coach leadership and collective athlete leadership are moderately and positively correlated and add to each other’s account variance of cohesion.

The data gathered did not fit the original hypothesized model requiring a theoretically sound alternative model to be created. This alternative still used the functional leadership framework, but required a re-specification of the leadership inputs to the model. More specifically, *Transformational Leadership*, *Management by Exception Active*, and *Avoidant Leadership* were found to function better as three individual leadership styles rather than as indicators of team or coach leadership. The alternative model then had coach and collective athlete indicators of the independent variables represented by the three leadership styles. The results of this model were that perceptions of transformational leadership by the coach and collective team significantly and positively influenced perceptions of team cohesion. The other

two leader styles had only a small influence on cohesion. In addition, perceptions of team cohesion influenced perceptions of team goal achievement significantly.

The fit of the alternative structural model showed mixed results. While the CFI indicated model fit, the χ^2 and *RMSEA* indicated that the model could be improved. It is likely that model fit was limited by some of the high correlations between the latent variables. For instance, *Transformational Leadership* and the reversed scored *Avoidant Leadership* were highly correlated, and both also correlated highly with the *Cohesion* latent construct. This issue highlights the importance of proper measurement in SEM and will be discussed in the limitations section below.

Before an in-depth discussion of the relationships in the model, it is important to highlight here that the instruments used were submitted to significant revision. The data from the modified structure of the MLQ and TMLQ represents an example of the frequently found lack of discrimination between hypothesized transformational scales (Bass & Riggio, 2006). It is promising that the revised structures still fit the “Full Range of Leadership Model,” and that exploratory factor analyses found possible structures with significantly fewer items in both cases. Similarly, because of poor internal consistency, the structure of the GEQ was modified substantially for the purpose of this study. Carron, Brawley, and Widmeyer (1998) have acknowledged some limitations of the GEQ, and encouraged researchers to continue to examine its structure. In the case of this study, only task and social components of cohesion were extracted via exploratory factor analysis. The SEM went on with all these modified scales, but it would be advisable to confirm the structure of these scales before drawing definitive conclusions on the relationships between variables discussed below.

That transformational leadership had a significant positive effect on cohesion was not a surprise as this outcome reflects the results of other studies examining this relationship (Callow et al., 2009; Heydarinejad & Adman, 2010). Regarding this particular relationship, there are two unique aspects of this study which should be highlighted. First, transformational leadership of the collective team and coach were used to predict cohesion, whereas previous studies have solely focused on coach leadership. As defined in this study, team leadership is the individual's perception of how members of the team collectively act as leaders. This is similar to, but somewhat different than peer leadership, which is defined as athletes who hold formal and informal roles within a team (Loughead et al., 2006). The results of the study supplement previous research by Price and Weis (2011), and Vincer and Loughead (2010) indicating that peer leadership has a significant relationship to cohesion. It does make intuitive sense that team leadership relate directly to cohesion, particularly task cohesion. Teams high on task cohesion work well together to decide on types of strategy and coordination. A team high on transformational leadership proactively and enthusiastically works toward team goals, which may indeed include deciding on appropriate strategies.

The second unique aspect of this study, in relation to leadership's effect on cohesion, is that both transformational and transactional leadership styles were examined. More specifically, the alternative structural model allowed for the examination of how *Transformational Leadership* and the two transactional leadership styles of *Management by Exception Active* and *Avoidant Leadership* differentially influence perceptions of team cohesion. As would be predicted by the "augmentation effect," as part of the Full Range Leadership Theory (Bass & Riggio, 2006), perceptions of *Transformational Leadership* influenced *Cohesion* above and beyond that of the influence of perceptions of the other leadership styles on *Cohesion*. Rowold

(2006), who examined leadership in martial arts, found evidence of this proposition in the sport domain. Rowold's results differ though in that he found *Management by Exception Active* leader behaviors were significantly positively related to athlete outcomes compared to the results herein, which indicates this leader style to have a non-significant influence on team cohesion. This difference could be accounted for either by the fact that the present study was focused on a team sport rather than an individual sport, or by the fact that *Management by Exception Active* was represented by not just the coach but also the collective team. For instance, the head coach of a baseball team may be less involved in the active correction of mistakes of his/her athletes, and the function of athlete leadership on a team also may not reflect this corrective aspect of leadership.

It is important to note the role *Avoidant Leadership* played in the model. According to Full Range of Leadership Theory, this leadership style should be considered least effective if not ineffective. Though the results did show *Avoidant Leadership* to have a small negative effect on cohesion, which would support theory, this result may be due more to a negative suppression effect rather than its potential negative effect on cohesion. Consider though that the *Avoidant Leadership* variable was reversed scored for purposes of running the SEM, and that before this calculation it had a very high negative correlation with *Transformational Leadership*. This fact combined with the result that *Transformational Leadership* had a significant positive relationship with *Cohesion*, may mean that *Avoidant Leadership* is truly an ineffective transactional style of leadership as would be intuitively and theoretically thought. Accordingly, researchers should hesitate in using this style of leadership as a predictor of team processes in future evaluations of the Team Leadership Model.

While cohesion is generally predicted to positively affect athlete outcomes, results to this end have been inconsistent (Bray & Whaley, 2001). That the results of this study indicate perceptions of cohesion have such a positive effect on perceptions of goal achievement is significant. This is true especially because the theoretical model utilizes Hackman and Walton's (1986) definition of leadership explaining that the job of the leader is to provide whatever is needed to help the team achieve its goals. In the case of this study, leaders influenced cohesion which helped allow teams to achieve their goals. It is not a new idea in sport that the effect of transformational leadership on performance is mediated by an athlete trait or process. Charbonneau, Barling, and Kelloway (2001) provided evidence that intrinsic motivation mediates the effect of coach transformational leadership on athletic performance. The results here continue to indicate the importance of leadership to team outcomes, but this relationship does not appear to be a direct one. This supports the often said cliché by coaches: "Coaches don't win games; players win games."

From both a conceptual and measurement perspective, it is not surprising that coach leadership correlated with team leadership relatively highly. Conceptually, this result provides evidence of the *cascading effect* described by Bass and Riggio (2006). Not only do team leadership and coach leadership correlate, but the appropriate indicator variables also correlate showing that the full range of leadership styles match. While no causal effect between coach and collective team leadership is examined herein, it is possible that this matching is a result of the athletes replicating their coach's style of leadership. Note that this study does not necessarily provide support that this match is beneficial to cohesion.

Applied Implications

There are several practical applied implications considering the results of this study. First, this study is unique in that it provides preliminary evidence that collective athlete team leadership is a component to improving team cohesion. This suggests that practitioners should create interventions and team building activities that improve team leadership. It is not a new concept to develop leaders in order to improve team environment. The MAC protocol (Smith, Smoll, & Cumming, 2007), for instance, is an intervention which theoretically improves the motivational climate of a team, and hence leads to improved athlete traits such as less performance anxiety. Still, the MAC is focused more on coach/athlete relationships rather than athlete leadership. Recent work on team captain leader development is a somewhat closer fit to the team leadership model proposed herein. Gould and Voelker (2010) provide a protocol describing how to train leadership in team-captains, some of which is centered on team building and developing cohesion on teams. Still, while this is a strong step towards formalizing athlete leadership training, it is still focused only on formal leaders rather than collective team leadership.

Most leadership interventions are directed at the coach or at the athletes, and few involve the coordination of the two. The theoretical model proposed here suggests that for a team to be truly cohesive, collective team leadership and coach leadership should both be considered. It is likely that this coordination is more complicated than a simple correlation. Aoyagi, Cox, and McGuire (2008) found that when perceived leadership behaviors were incongruent with preferred leadership behavior cohesion increased. It was hypothesized that when athletes have discord with their coach they turn to each other for support. Clearly more research must take place to examine this complex relationship, but regardless, there appears to be a need for sport

psychologists to find ways to integrate leadership team building with coaches and athletes. A possible preliminary undertaking could be working to nest team visions within the coach's vision.

Limitations

On the surface, the results point to an interesting new direction for team leadership in sport. Caution must be taken though considering some of the significant measurement problems and methodological limitations of this study. First, both leadership measures used were not designed for the domain of sport. Each of these measures failed to distinguish between the different transformational leadership styles and required significant modification. It is a significant limitation to this study that the same data used to reconstruct these instruments was the same data used to test the theoretical structural model. To truly test this model the measurement of both coach and team leadership constructs must be closely examined. With good measurement confirmed, then these improved instruments can be used to further confirm the proposed theoretical model in future studies. As a good start, Callow et al. (2009) have found preliminary support for a sport oriented instrument named the Differentiated Transformational Leadership Inventory (DTLI). The DTLI has shown to have factorial validity, but this new scale is inappropriate for studying the Full Range of Leadership Theory considering it measures only transformational factors and contingent reward.

Further evidence of measurement inaccuracy is indicated by the generally high correlations between the independent *Transformational Leadership* and *Avoidant Leadership* factors and the dependent *Cohesion* factor. This likely created a negative suppression effect between *Avoidant Leadership* and *Cohesion*. It is likely that common method bias was at work here. All inventories were taken via a lengthy online questionnaire, and while actions were taken

to give athletes the opportunity to complete the inventories over a two-week period, there was no true control over when they would complete them.

Perhaps this lack of control was also a cause for the fairly uneven number of players per team. This led to an inability to appropriately evaluate the data using MLSEM since unbalanced group sizes can bias the results (Hox, Mass, & Brinkhuis, 2010). This is a difficult problem to solve considering the large number of athletes, teams, and athletes per team which are needed to utilize MLSEM. Logistically it makes sense to utilize on-line questionnaires in order to gather so much data, but the quality of the data may suffer. Rather than coordinating with NCAA teams from multiple universities, it may be beneficial to utilize many club or intramural teams at one university location so as to be able to exploit greater control over paper and pencil instruments. Having a time barrier between collections of separate instruments may also further reduce issues with common method bias.

From a methodological standpoint there are limitations given the population used for the study. Athletes from only baseball and softball were used which limited the ability to generalize results to other sports. Conceivably, other sports such as basketball and soccer, which are much more fluid and require constant communication/coordination during play, may garner differing results than those attained here. In addition, note that a significant percentage of the population were female. Gender differences were not considered in this study but certainly could be assessed in the future.

Implications for Future Research

First and foremost, considering the limitations above, the first area of further research is to improve on the measurement of the potential constructs within the model. In particular, measuring collective team leadership in sport may be an extremely fruitful area of research. In

addition, ways should be sought out to most effectively measure team goal achievement. This construct will continue to be difficult to measure as each team will likely decide upon different goals specific to the team. Ultimately, the instrument used to measure this construct was created for this study and should be evaluated critically in future research.

The Team Leadership in Sport Model may include many team processes besides cohesion that affect team outcomes. Given the limitation SEM has in evaluating very complex models, as limited by sample size, only the team process of cohesion was examined here. Other very important team processes such as communication, collective efficacy, and coordination should be examined in the future as well.

Directly related to the examination of different team processes is the potential to examine how coaches and their collective teams provide different leadership functions in the goal of team improvement. Loughhead and Hardy (2005) found coaches and team leaders provide for different needs of team functioning and suggested that there must be a counterbalance between coach and athlete leadership. Because the hypothesized model had to be revised, it was impossible to examine how the two leadership sources may have differentially influenced cohesion. By examining the two different sources of leadership separately along with multiple team processes, researchers can determine how coach and athlete team leadership best balance or counterbalance each other.

Finally, given better measurement and greater expansion of team processes in the model, opportunities for applied research may result. Organizations such as the Institute for Youth Sport (Gould & Voelker, 2010) have taken great care to create research-based interventions designed to develop leadership in athletes and coaches. It is important that these organizations have

methods by which to assess the success of their goals. The Team Leadership in Sport Model can serve as a framework on which sport psychologists can base their assessments.

Conclusion

The goal of this research was to provide initial evidence of a new team leadership paradigm in the domain of sport. As leadership continues to be of great interest to both researchers and practitioners alike, and the study of athlete leadership gains more popularity, the proposal of a new model utilizing some of the most recent ideas from organizational and industrial psychology seems fit. The results of this investigation reveal a picture that coach and team leadership influence team goal achievement via the effect their leadership has on team cohesion. Future research should be focused on better measurement of the constructs evaluated in this model as well as on the measurement of other team processes. With further evidence that this model reflects reality in varying sports, deliberate interventions could be created to develop coach and collective athlete leadership as well as helping to effectively coordinate them. The model and measurement associated with it could then be utilized to help assess the effectiveness of such interventions.

APPENDIX A

MULTIFACTOR LEADERSHIP QUESTIONNAIRE

MLQ factors and example items. (From Avolio, B. J., & Bass, B. M. (2004). *Multifactor Leadership Questionnaire*. Mind Garden, Inc.)

Leadership Factor	Item
Idealized Influence (Attributed)	Goes beyond self-interest for the good of the group.
Idealized Influence (Behavior)	Talks about his/her most important values and beliefs
Inspirational Motivation	Talks optimistically about the future
Intellectual Stimulation	Re-examines critical assumptions to question whether they are appropriate.
Individual consideration	Spends time teaching and coaching
Contingent Reward	Provides me with assistance in exchange for my efforts
Management-by-Exception (Passive)	Fails to interfere until problems become serious.
Management-by-Exception (Active)	Focuses attention on irregularities, mistakes, exceptions, and deviations from standards
Laissez-faire Leadership	Avoids getting involved when important issues arise

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APPENDIX B

TEAM MULTIFACTOR LEADERSHIP QUESTIONNAIRE

TMLQ factors and example items. (From Avolio, B. J., & Sivasubramaniam, N. Murry, W. D., Jung, D. & Garger (2003). *Team Multifactor Leadership Questionnaire*. Mind Garden, Inc.)

Leadership Factor	Item
Inspirational Motivation	Members of my team work out agreements for what's expected from each other.
Intellectual Stimulation	Members of my team envision exciting new possibilities.
Individualized Consideration	Members treat others as individuals
Management by exception	Members of my team closely monitor each other's performance for errors
Laissez-faire Leadership	Members of my team avoid addressing problems

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APPENDIX C

GROUP ENVIRONMENT QUESTIONNAIRE

Instructions

This questionnaire is designed to assess your perceptions of your athletic team. There are no right or wrong answers so please give your immediate reaction. Some of the questions may seem repetitive but please answer ALL questions. Your candid responses are very important to us. Your responses will be kept in strict confidence. Neither your coach nor anyone other than the researcher will see your responses.

The following questions are designed to assess your feelings about **YOUR PERSONAL INVOLVEMENT** with this team. Please **CIRCLE** a number from 1 to 9 to indicate your level of agreement with each of the statements.

1. I do not enjoy being a part of the social activities of this team.

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

2. I am not happy with the amount of playing time I get.

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

3. I am not going to miss the members of this team when the season ends.

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

4. I am unhappy with my team's level of desire to win.

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

5. Some of my best friends are on this team.

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

6. This team does not give me enough opportunities to improve my personal performance.

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

7. I enjoy other parties more than team parties.

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

8. I do not like the style of play on this team.

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

9. For me, this team is one of the most important social groups to which I belong.

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

The following questions are designed to assess your perceptions of **YOUR TEAM AS A WHOLE**. Please CIRCLE a number from 1 to 9 that best indicates your level of agreement with each of the statements.

10. Our team is united in trying to reach its goals for performance.

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

11. Members of our team would rather go out on their own than get together as a team.

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

12. We all take responsibility for any loss or poor performance by our team.

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

13. Our team members rarely party together.

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

14. Our team members have conflicting aspirations for the team's performance.

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

15. Our team would like to spend time together in the off season.

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---

**Strongly
Disagree**

**Strongly
Agree**

16. If members of our team have problems in practice, everyone wants to help them so we can get back together again.

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

17. Members of our team do not stick together outside of practices and games.

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

18. Members of our team do not communicate freely about each athlete's responsibilities during competition or practice.

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

APPENDIX D

Team Outcome Questionnaire

This questionnaire is designed to assess team goal accomplishment. Using the scale below, indicate to what degree you believe your team has achieved each goal. Please answer each item considering the season in its entirety, and not for individual games or practices. If you believe the item is not applicable to your team, please leave it blank.

Not at all	To a small degree	To a modest degree	To a great degree	Completely
0	1	2	3	4

1. Has your team accumulated its potential amount of victories?..... ____
2. Has your team worked as hard as possible in practice?..... ____
3. Has your team performed in games with great effort?..... ____
4. Has your team competed with a high quality of play?..... ____
5. Has your team reached its potential level of physical fitness?..... ____
6. Has your team played as a coordinated unit during games?..... ____
7. Has your team reached its potential in tournaments?..... ____
8. Has your team achieved the skills critical to perform in your sport?..... ____
9. Has your team executed its strategy effectively during games?..... ____

APPENDIX E

Demographics Form

Code Letter: _____

Age: _____

Race (check one):

☐ White, Non-Hispanic

☐ Asian American

☐ African American

☐ American Indian

☐ Hispanic/Latino

☐ Other (Specify) _____

Year in school:(Check one):

☐ Freshman

☐ Sophomore

☐ Junior

☐ Senior

☐ Graduate School

Are you typically a starter on this team (check one)? ☐ Yes ☐ No

What, if any, formal leadership position do you hold on this team (check one)?

☐ Captain

☐ Co-captain

☐ None

☐ Other (specify) _____

For how many seasons have you been a competing member on this team? _____

List what position or positions do you typically play on your team? (Point Guard, Shooting guard, small forward, power forward, center)?

APPENDIX F
INFORMED CONSENT FORM

Team Leadership in Sport

I am a graduate student under the direction of Professor Gershon Tenenbaum in the department of educational psychology and learning systems at Florida State University. I am conducting a research study to examine athlete and coach leadership in teams and their effects on team processes and effectiveness.

Your participation will involve the completion of seven questionnaires which in total take an average of 30 minutes to complete.

Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. The results of the research study may be published, but your name and the team's will not be revealed. In addition, personal information obtained during the course of the study will remain confidential, to the extent allowed by law. Surveys will be kept in a secure location and only researchers will have access to the records.

There are no foreseeable risks or discomforts if you agree to participate in this study.

Although there may be no direct benefit to you, the possible benefit of your participation is a greater understanding of team leadership which may lead to future leadership development programs for both coaches and athletes.

If you have any questions concerning this research study, please call me at [REDACTED] or email [REDACTED]. In addition my major professor Gershon Tenenbaum may be contacted at [REDACTED].

I give my consent to participate in the above study.

Participants Signature

Date

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Committee, Institutional Review Board, through the Vice President for the Office of Research at (850) 644-8633.

APPENDIX G
IRB APPROVAL

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
[\(850\) 644-8673](tel:(850)644-8673) · FAX [\(850\) 644-4392](tel:(850)644-4392)

RE-APPROVAL MEMORANDUM

Date: 2/25/2010

To: Jeffrey Coleman

Address: [REDACTED]
Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research
Team Leadership in Sport

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 2/24/2011, you must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:
HSC No. 2009.3793

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BIOGRAPHICAL SKETCH

Jeff Coleman was born on October 25, 1978 in Reading, Pennsylvania. He went on to Millersville University where he graduated with a Bachelor of Arts degree with honors in Psychology and a minor in Coaching Education. With a passion for understanding the psychology of performance, he continued his education by completing his Master in Education at Temple University in 2003.

Jeff entered Florida State University's doctoral program in Sport Psychology in the fall of 2003. There he had the opportunity to work for the Learning Systems Institute helping faculty in a research project centering on expertise in leadership for the U. S. Navy. While at FSU he completed the certificate program in Educational Statistics. Also while in Tallahassee, Jeff worked as a certified Tennis Professional teaching both junior and adult players the physical and mental skills of tennis. In June 2008, he took the opportunity to become a full-time performance psychology instructor for the Center for Enhanced Performance at the United States Military Academy at West Point. He received his Ph.D. from Florida State University in April 2012.