ABSTRACT

EFFECTS OF COACHING BEHAVIORS ON TEAM DYNAMICS: HOW COACHING BEHAVIORS INFLUENCE TEAM COHESION AND COLLECTIVE EFFICACY OVER THE COURSE OF A SEASON

By Lindsay S. Ronayne

The purpose of this study was to examine the relationship between perceived coaching behaviors and the changes that occur in college athletes' perceptions of team cohesion and collective efficacy during a season. Additionally, the strength and direction of the relationship between collective efficacy and team cohesion was tested. To test these relationships, a series of questionnaires were administered to 180 collegiate athletes in the early season and late season. Multivariate multiple regression analyses indicated that increases in athletes' perceptions of team cohesion and collective efficacy over the season were positively correlated with perceptions of their coach exhibiting higher levels of democratic behavior, training and instruction, social support, positive feedback (LSS), and positive and informational feedback (CFQ) and lower levels of autocratic behaviors, punishment-oriented feedback, and non-reinforcement/ignoring mistakes. A significant relationship was also found between team cohesion and collective efficacy at the early season and especially at the late season measurement.

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CHAPTER ONE

INTRODUCTION

Within the field of social psychology, the number of studies that have been conducted to investigate the dynamics that occur within a group structure has increased significantly over the past two decades. Since most people encounter a group environment at some point in their life, research that examines the vitality and changing nature of a group is of importance to the social psychology literature. Within the social psychology of sport literature as well, the study of group dynamics has become a relatively major component of the research base. The term, group dynamics, is used to describe the study of the behavioral characteristics of groups as well as the study of the vitality and changing nature of groups. The relationships exhibited among members of groups are not static and are easily influenced by outside sources (Widmeyer, Brawley, & Carron, 2002).

A group is defined by the presence of five aspects: a common fate among members, experience of mutual benefit, the presence of a social structure, group processing, and self-categorization. A sport team is thus defined as "a collective of two or more individuals who possess a common identity, have consensus on a shared purpose, share a common fate, exhibit structured patterns of interaction and communication, hold common perceptions about group structure, are personally and instrumentally interdependent, reciprocate interpersonal attraction, and consider themselves to be a group" (Carron & Hausenblaus, 1998, pp. 13-14).

The research conducted to date to examine group dynamics in the sport setting has focused on many aspects of the group, including group formation, size, structure, leadership, conformity, motivation, tasks, cohesion, and efficacy. The two aspects of the group that are the focus of the current project are group cohesion and collective efficacy. Group cohesion is defined as the degree to which a group tends to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of the members' emotional needs (Carron, Brawley, & Widmeyer, 1998). Collective efficacy is the shared sense of competence among a team concerning the group's ability to be successful in its attempts to meet the demands placed upon the members (Zaccaro, Blair, Peterson, & Zazanis, 1995). These two group dynamics are very important to the success of a sport group because they represent how the team, as a unit, works together and the extent to which individual members believe they can be successful.

There are many factors that can affect a group's sense of cohesion and collective efficacy. One major factor that can affect how a team operates and functions is the behavior of the coach. There is a relatively large literature base examining how coaches' behaviors affect the psychological responses of *individual* athletes, but there is very little research that has looked at the effects of coaches' behaviors on *team* dynamics.

The purpose of the current project is to examine how the athletes' perceptions of their coaches' behaviors and leadership styles can affect the athletes' perceptions of their team's cohesion and collective efficacy. Furthermore, the second purpose of this study is to examine the athletes' perceptions of their team's cohesion and collective efficacy over the course of a season in order to examine the dynamic and constantly changing nature of these aspects of a team. The research design thus consists of a longitudinal data collection project to capture how the athletes' perceptions may change over time. Specifically, a series of self-report questionnaires were administered to a sample of Division I male and female college athletes from a variety of sports at two timepoints during the competitive season (early and late season). To provide a basis for the proposed research project, the research and theory in the areas of coaching effectiveness, group cohesion, and collective efficacy are reviewed in the next chapter.

CHAPTER TWO

REVIEW OF LITERATURE

The review of the literature that is contained in this chapter focuses on the three areas relevant to the current proposed research project. These three areas include coaching effectiveness, group cohesion, and collective efficacy. Each of these areas is reviewed separately in this chapter beginning with an overview of the research and theory in the area of coaching effectiveness. In the second section of this chapter, the underlying theories and defining characteristics of group cohesion are analyzed. Existing literature identifying and defining both the antecedents and consequences of group cohesion are also discussed. In the third section of this chapter, the collective efficacy literature is reviewed as well as the existing research highlighting the relationship between collective efficacy and group cohesion. This chapter concludes with a summary of the current state of knowledge regarding the relationship between coaches' behaviors and the team's cohesion and collective efficacy. This summary is then used to describe the purpose, intent, and hypotheses underlying the current study.

Coaching Effectiveness

The research that has been conducted over the past two decades in the area of coaching effectiveness has primarily been focused on identifying the coaching characteristics, leadership styles, and behavioral patterns which are most effective. In general, these research studies have defined an "effective coach" as one who elicits either successful performance outcomes or positive psychological responses on the part of her or his athletes (Horn, 2002). Since coaches affect not only their athletes' physical performance but also their psychosocial well-being, it is important for an effective coach to become attuned to the many personal and individual needs of their athletes. Thus, in addition to the technical skills of their sport, effective coaches may be required to occupy many roles within the lives of their athletes. These may include being a leader, follower, teacher, role model, limit setter, psychologist/ counselor and/or mentor (Anshel, 2003). Effective coaches are those who are prepared to meet the individual needs of their athletes and realize that they can make a difference in the team's performance by improving their

own coaching skills and understanding the effect that their behavior can have on their athletes (Anshel, 2003).

Theoretical Models of Coaching Effectiveness

In an effort to organize and conceptualize the research on coaching effectiveness, Chelladurai (1990) developed a Multidimensional Model of Leadership that outlines the processes included in the effective coach-athlete relationship. In this model (see Figure 1), Chelladurai proposes that the leadership behaviors that will elicit the successful outcomes of team performance and athlete satisfaction are a function of three interacting aspects: the coaches' actual behavior, the type of coaching behavior or style preferred by the athletes, and the type of coaching style that is appropriate to, or required by, the specific sport context. Thus, according to Chelladurai, successful outcomes (high performance and high athlete satisfaction) will occur when there is congruence between these three aspects of the coaches' behavior. This would suggest that when a coach instructs in a way that is appropriate for the sport environment and which is consistent with the needs and desires of the athletes, then team and individual performance would be maximized and satisfaction among the athletes on the team would also be high. Chelladurai's model also implies a reciprocal relationship between the coaches' behavior and the athletes' satisfaction and performance, in that the model specifies that the coaches' actual behavior is also heavily influenced by the athletes' happiness and their performance outcomes. Thus, all three aspects of coaching behavior interact with each other to produce the end result.

Chelladurai's (1990) model also provides a framework for understanding the factors which can affect or determine leaders' behavior. Specifically, Chelladurai suggests that the behaviors of the leader (whether required, actual, or preferred) are influenced by three main characteristics. The main antecedents of leadership behavior are situational, leader, and member characteristics. Athletes' preferred, as well as the required, behavior of leadership is influenced by situational characteristics such as the organizational climate and the values and norms of the team. The athletes' preferred leadership style as well as the required leader behaviors are also influenced by the athletes' own characteristics, such as age, skill level, gender, culture and personality. These athlete-related characteristics, in addition to the individual characteristics of the coach him/herself (i.e., age, gender, experience, personality, etc.), all influence or determine the actual behaviors the coach will

exhibit, which in turn, may affect the performance and satisfaction of the athletes and team as a whole (Chelladurai, 1990).

In the decade following the publication of Chelladurai's (1990) model, a considerable amount of research was conducted to test the links hypothesized in the model. The results of this research have been extensively reviewed by other writers (e.g., Chelladurai, 1993; Chelladurai & Riemer, 1998; Horn, 2002). In general, these reviewers have concluded that the research conducted to date does provide support for a number of the links in the hypothesized model. That is, all three aspects of leaders' behavior have been shown to affect or predict some of the variability in the positive outcomes of athlete performance and satisfaction. In addition, some support has been demonstrated for the congruence hypothesis (i.e., the hypothesis that the degree to which the three aspects of leadership behavior are congruent will positively affect the outcome variables of athlete performance and satisfaction). Despite this general support, the reviewers of this research base have also identified some limitations to Chelladurai's model. These limitations are identified and described in the following paragraphs.

The first limitation to Chelladurai's (1990) model is that it focuses on only two consequences (or outcomes) of the coach's or leader's behaviors: team performance and athlete satisfaction. That is, the model fails to recognize that the coach's behavior can also affect many other aspects of the athletes' psychological well-being (e.g., self-perceptions, affective reactions) and behavior (e.g., persistence, moral behavior, inter-individual cooperation). Secondly, Chelladurai's model does not specify a *process* by which the coaches' behavior affects athletes. The model simply states that the three aspects of coaches' behavior (actual, required, and preferred) will interact to affect athletes' performance and satisfaction. The model does not clearly specify the way in which the coach's behaviors will or does affect her or his athletes. Finally, although the model specifies and identifies a number of factors that may serve as antecedent factors which may affect the three aspects of coaches' behavior, the model again fails to clearly explain the process by which these antecedent factors affect or determine the coach's actual behavior. In summary, then, Chelladurai's (1990) model does provide some information or direction regarding the way in which coaches' behavior affects athletes' performance and level of satisfaction. But, the model also exhibits some limitations.

A second model of coaching effectiveness was recently developed by Horn (2002) who labeled her framework a working model. Horn's (2002) model is more complex than Chelladurai's model because it recognizes not only the direct and indirect effects of coaching behavior, but it also provides a more detailed outline of the complex process by which athletes are influenced by their coaches, both cognitively and behaviorally. The working model (see Figure 2) as a whole can be summarized or described in three major points.

The first main point regarding this working model (Horn, 2002) focuses on the left side of the model (boxes 1-3), which identifies the possible factors that affect coaches' behaviors. Similar to Chelladurai's model, Horn's (2002) model also recognizes the sociocultural context (box 1), the organizational climate (box 2), and the coaches' personal characteristics (box 3) as antecedents of the coaches' behavior. But, Horn's model shows that these three antecedents affect the coaches' behavior via the coaches' own formulated values, beliefs and expectancies of the team. Thus, the three antecedent factors of sociocultural context (box 1), organizational climate (box 2), and coaches' personal characteristics (box 3) are hypothesized to affect or determine coaches' expectations, beliefs, and goals (box 4) which, in turn, affect or determine coaches' behavior.

The second main point of Horn's (2002) model focuses on the right side of the model – the effect of coaches' behavior on the athletes' performance and behavior. In particular, coaches' behavior is hypothesized to affect the athletes' performance and behavior both directly and indirectly. The link between boxes 5 and 6 shows the much theorized direct relationship between the way the coach behaves in practice and competitive contexts (feedback, reinforcement, etc.) and the athletes' performance and behavior. Thus this link (box 5 to box 6) proposes that there are certain aspects of coaches' behavior that have a direct effect on athletes' performance and behavior. In addition, however, the coaches' behavior can have an indirect effect on the athletes' performance athletes' perceptions of their coaches' behavior, which then influence the athletes' own self-perceptions, beliefs, attitudes, and motivation. Ultimately, the athletes' self-perceptions, beliefs, attitudes and motivations directly affect their performance and behavior. This model suggests, then, that each individual athlete perceives and interprets

the coach's behavior in a different way, which in turn influences each athlete's selfperceptions, performance, and behavior differently.

The third aspect to Horn's (2002) working model further examines the indirect relationship between coaches' behaviors and performance by recognizing that coaches' effectiveness in the sport domain is mediated by differences in both situational and individual variables. Not only does each individual athlete perceive and interpret his/her coaches' behavior differently (as stated above), but the effectiveness of different types of coaching behaviors also varies according to sport (e.g., skill level, age) and athlete variables. As the model shows, athletes' interpretation of their coaches' behavior is also mediated by the antecedent factors of sociocultural context, organizational climate and personal characteristics (e.g., age, gender, traits and dispositions). Ultimately this shows that effective coaching is determined by the individual and is a function of individual attributes, such as sport and personal characteristics.

In her 2002 review of the research on coaching effectiveness, Horn identifies a fairly large number of research studies which were used to develop her working model and which, thus, can be used to provide support for the hypothesized links in the working model. Given that the current research study focuses on the links between college athletes' perceptions of their coaches' behavior (box 8) and athletes' perceptions and beliefs regarding their team's cohesion and collective efficacy (box 9), only the research relevant to this link is summarized in the following paragraphs.

Empirical Research on Coaching Effectiveness

Most of the studies conducted to date to examine the link between college athletes' perceptions of their coaches' behavior and the athletes' beliefs, perceptions, and attitudes have either looked at the effects of coaches' leadership style or the effects of coaches' feedback patterns on athletes' beliefs, perceptions, and attitudes. To examine coaches' leadership style, most researchers have used the Leadership Scale for Sports (Chelladurai & Saleh, 1978, 1980). The LSS is a sport-specific instrument which was designed to measure the athletes' perceptions of their coaches' leadership style according to five dimensions: training and instruction, autocratic behavior, democratic behavior, social support behavior, and positive feedback behavior. The five dimensions of coaches' leadership style, as measured by the LSS, are outlined and described in Table 1. As the

information in this table suggests, coaches who score high on the training and instruction factor would be those coaches who exhibit high frequencies of behavior which are centered around performance improvement. Thus, these coaches emphasize and facilitate training (i.e., maximize use of practice time, select good drills and instructional activities) and instruction (i.e., teaching skills, coordinating roles and working relationships between team members). The two dimensions of autocratic and democratic behaviors describe coaches' decision-making styles. Coaches who score high on the democratic scale are perceived to allow their athletes to participate in team decisions while coaches scoring high on the autocratic scale are those who make all team decisions and who stress their own authority in dealing with individual athletes. High scores on the positive feedback dimension describe coaches who provide high frequencies of praise or other rewarding behavior to athletes after good performances while high scores on the social support factor describe coaches who emphasize a warm and caring relationship with individual athletes outside of the athletic context.

The LSS has been used in a fairly large number of studies designed to assess the degree to which the five leadership style dimensions are related to athletes' performance and psychological responses. Example studies which have been conducted with collegiate athletes are reviewed in the following paragraphs.

In one of the earliest studies to employ the LSS to examine coaching effectiveness in collegiate athletes, Weiss and Friedrichs (1986) tested aspects of Chelladurai's and Carron's (1978) multidimensional theory of leadership to examine the relationship between coaching behaviors, coaching attributes and institutional variables and athlete satisfaction and team performance. The sample in this study consisted of 251 male college basketball players and 23 coaches with at least two years of experience at their current institutions. The researchers collected data from the athletes via self-report measures, using the LSS and the Athlete Satisfaction Scale (Smith, 1976). The coaches assessed themselves using a demographic questionnaire consisting of questions pertaining to their background and experience within sport. Statistical analyses of the data revealed a number of relationships between coaches' leadership style (as assessed via the LSS) and the team's performance (seasonal win-loss percentage) and their level of satisfaction. Specifically, athletes who perceived their coaches to be high in social support behavior, positive feedback, and to exhibit a more democratic style of leadership also had higher satisfaction scores than did athletes whose coaches were lower in these three dimensions of leadership behavior. In contrast, only one coach behavior was associated with the performance measure. Specifically, high frequencies of perceived social support on the part of the coach were correlated with poorer team performance records. The authors of this study examined this correlation by taking into account the objectives at different competitive levels. They concluded that within college athletics where win/loss records are critical, less social support may be desirable by the athletes (Weiss & Friedrichs, 1986)

A second study conducted by Dwyer & Fischer (1990) also used the LSS to examine the level of satisfaction athletes experienced with regard to their coach. The sample in this study consisted of 152 wrestlers over the age of 15. The average age of the sample was 16.9 years with an average of 3.1 years of wrestling experience. The athletes' satisfaction as a function of their perceptions of leaders behaviors and type of sport was assessed via self-report questionnaires. The questionnaires used were the LSS and a single-item questionnaire measured on a five-point Likert scale, which pertained directly to athletes' satisfaction with their coach. The results of this study found that wrestlers' level of satisfaction with regard to their coaches was high if the wrestlers perceived the coaches to exhibit high levels of positive feedback, social support, democratic behavior and training and instructional behaviors as well as taking on a less autocratic leadership style. Thus, the results revealed that athletes who were more satisfied with their coach perceived them to score high on four of the LSS leadership subscales (positive feedback, social support, training and instruction, and democratic behavior) and low on the autocratic behavior subscale.

In 1990, McMillan conducted a similar study to examine collegiate soccer players' level of satisfaction with regard to their coaches. The athletes' satisfaction was assessed using self-report questionnaires. Analysis of the data obtained from the LSS revealed that collegiate soccer players' satisfaction is mainly predicted by the degree to which they perceive their coaches to exhibit more of a democratic style of leadership and to provide high frequencies of training and instructional behavior.

In general, then, the research conducted to examine coaching effectiveness with college athletes has suggested that athletes' satisfaction is highest when coaches are

perceived to exhibit a more democratic leadership style and to provide high frequencies of social support, positive feedback, and training and instructional behavior. It is important to note that the previously described studies all used the LSS to assess athletes' perceptions of their coaches' behavior. Other studies have been conducted to examine different aspects of college coaches' behavior. These are described in the following paragraphs.

In addition to examining the link between college athletes' perceptions of their coaches' leadership style and athletes' self-perceptions, and perceptions of ability, other researchers have looked at the effects of coaches' feedback patterns. These studies have generally used a questionnaire version of the Coaching Behavior Assessment System (CBAS) (Smith, Smoll, & Hunt, 1977). The CBAS was originally developed as a behavioral assessment system for coding and analyzing coaching behaviors in a naturalistic setting. In using the CBAS, coders observe a coach in an athletic setting and report and record their behaviors according to 12 predefined categories of coaching behavior. The 12 categories include coaches' responses to successful player performances (praise or positive reinforcement and non-reinforcement or ignoring of the player performance), coaches' responses to athlete errors (mistake-contingent encouragement, mistake-contingent technical instruction, punishment, punitive technical instruction, and ignoring mistakes), coaches' responses to misbehaviors on the part of the players (keeping control behaviors), and spontaneous coaching behaviors (spontaneous general technical instruction, spontaneous general encouragement, team organizational behaviors, and game-irrelevant general communication). The 12 categories that comprise the CBAS are outlined and described in Table 2.

The CBAS (Coaching Behavior Assessment System) is an observationally-based measure of coaches' behavior in practice and game situations and thus requires data collectors to record and assess coaches' behavior via observation of their actual behavior in practice and game situations. To facilitate larger sample sizes and to obtain a measure of athletes' *perceptions* of their coaches' behavior (rather than *observed* measures of the coaches' behavior), questionnaire versions of the CBAS have also been developed. The first questionnaire was developed by the designers of the CBAS (Smith, Smoll, & Curtis, 1978; Smoll, Smith, Curtis, & Hunt, 1978). Other researchers have developed and used a shorter version of the questionnaire-based CBAS. Specifically, these researchers have

focused only on the reactive categories of the original CBAS (i.e., those feedback statements that are given by the coaches in response to players' successful and unsuccessful performances). This shortened questionnaire, typically labeled the Coaching Feedback Questionnaire (CFQ) includes only eight categories of coach feedback (see Table 3), three given in response to successful player performances and five given in response to unsuccessful player performances. The studies which have examined this aspect of coaches' behavior and which are most relevant to the current study are reviewed in the following paragraphs.

Black & Weiss (1992) examined the relationships between perceived coaching behavior and athletes' perceptions of their sport ability and their level or type of motivation. The sample in this study was comprised of 312 male and female competitive swimmers ranging in age from 10 to 18 years of age. The athletes assessed their coaches' behaviors as well as their own ability and motivation through the process of self-report questionnaires. Specifically, the athletes completed the Perceived Coaching Behavior Scale (also called the CFQ) (Smith et al., 1979; Horn & Glenn, 1988), the Self-Perception Profile for Children (Harter, 1985), Motivational Orientation in Sport Scale (Weiss, Bredemeier, & Shewchuk, 1985), and the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989, Ryan, 1989). The results of this study found that athletes who perceived their coaches to provide more frequent information following successful performances, and more frequent amounts of encouragement combined with corrective or technical information following unsuccessful performance attempts scored higher on the intrinsic motivation scales than did athletes who perceived their coaches to provide lower frequencies of these types of feedback.

In a similar study, Allen and Howe (1998) examined the relationship between coaches' feedback patterns and athletes' perceptions of their competence and their level of sport satisfaction. The study surveyed 143 adolescent female field hockey players from British Columbia ranging in age from 14 to 18 years. The athletes' perceptions of competence and satisfaction were assessed using a self-report questionnaire. In addition, the athletes assessed their coaches' feedback patterns using the CFQ. To assess individual athletes' actual sport ability, the coaches were asked to rate each athlete relative to all of the other players at the end of the season. The results of this study indicated that both

players' actual sport ability and coaches' feedback patterns were significantly related to athletes' perceptions of their competence and their level of satisfaction. Specifically, it was revealed that athletes' level of satisfaction with regard to their coach and to their involvement with their team was best predicted by a combination of variables including their own level of ability (higher ability associated with higher satisfaction) but also by two coach feedback variables. That is, players who perceived their coaches to provide high frequencies of praise and informational feedback after a successful performance attempt on the part of the athlete and higher frequencies of encouragement and corrective information following their unsuccessful performance attempts scored higher on the satisfaction scales. Similar results were found for the perceived competence variable. The results of this study, then, provide support for the link between coaches' feedback patterns and their athletes' perceptions of competence and satisfaction.

In a later study, Amorose and Horn (2000) examined intrinsic motivation levels among college athletes as a function of their coaches' behavior. The sample in this study consisted of 386 male and female, Division I college athletes ranging in age from 17 to 23 years. The athletes were from a variety of sports including football, gymnastics, hockey, swimming, wrestling, and field hockey. The athletes completed a demographic questionnaire, the Leadership Scale for Sports (LSS), the Coaching Feedback Questionnaire (CFQ), and the Intrinsic Motivation Inventory (IMI). The results of this study revealed that the athletes' perceptions of their coaches' behavior were significantly related to their levels of intrinsic motivation. In particular, athletes with higher levels of intrinsic motivation perceived their coaches to exhibit a coaching style that emphasized training and instruction and was high in democratic behavior and low in autocratic behavior. Furthermore, the athletes with higher levels of intrinsic motivation perceived their coaches to provide higher frequencies of positive, informationally-based feedback and less punishment or ignoring behaviors.

In a follow-up study, Amorose and Horn (2001) used a longitudinal data collection procedure to examine changes in the intrinsic motivation levels of first year college athletes and the relationship of these changes in intrinsic motivation to athletes' perceptions of their coaches' behavior. The study sample included 72 male and female Division I college athletes representing a variety of sports (e.g., softball, swimming, track and field, and wrestling). Early season measures consisted of a demographic questionnaire and the sport-oriented version of the Intrinsic Motivation Inventory (IMI) (McAuley, Duncan, & Tammen, 1989). The late season measures were the IMI and the LSS, which were previously discussed. The results of this study revealed that neither scholarship status nor time (change from early season to late season) affected the athletes' level of intrinsic motivation, but a strong relationship was found between athletes' perceptions of their coaches' behaviors and changes in athletes' level of intrinsic motivation over the season. Those athletes who experienced an increase in intrinsic motivation over the course of a season were those that perceived their coaches to exhibit higher frequencies of training and instruction behavior and lower frequencies of social support and autocratic behavior. This study supports other research in showing the relationship between intrinsic motivation and high levels of training and instruction and low levels of autocratic leadership behaviors. But the longitudinal nature of this investigation also provided support for the notion that *changes* in athletes' levels of intrinsic motivation over the course of a competitive season can be linked to their perceptions of their coaches' behavior. Thus, this longitudinal (season-long) research design was particularly useful in that it added to the literature suggesting a strong *causal* connection between coaches' behavior and athletes' psychosocial status.

In general, the results of the research that have been reported to date looking at coaches' leadership style (using the LSS) and coaches' patterns of feedback (using a questionnaire version of the CBAS) have found support for the effects that such coaching behaviors can have on college and adolescents' perceptions of competence, level of satisfaction, and level of intrinsic motivation. However, as Horn (2002) noted in her recent review of this research, there has been less research to look at the effects of coaches' behavior on other aspects of athletes' performance, behavior, and psychological wellbeing. In addition, all of the previously reported studies focused on the athletes' *individual* perceptions of their competence, satisfaction, and intrinsic motivation. Only a few studies have examined the effect which coaches' behavior might have on the team as a whole, or on the dynamics of the group. The few studies that have been conducted on this topic are discussed in the following paragraphs.

Coaching Behavior and Team Dynamics

In the first study in this area, Westre & Weiss (1991) examined the relationship between athletes' perceptions of their coaches' behaviors and athletes' perceptions of their team's cohesion. The study sample included sophomore, junior, and senior high school male football players representing six public high schools in the same district (N=163). The study examined not only the relationship between athletes' perceptions of their coaches' behavior and team cohesion, but also tested whether this relationship was a function of perceived team and individual success, player status, and position played. The researchers used the Leadership Scale for Sports (LSS) to measure perceived coaching behaviors and the Group Environment Questionnaire (GEQ) to measure athletes' perceptions of their team's cohesion. This study found that athletes who perceived that their coaches employed a more democratic leadership style and provided higher levels of social support, positive feedback and training and instruction also perceived and reported higher levels of team cohesion. This initial study, then, provided support for the hypothesis that coaches' leadership styles are related to team cohesion.

In a corresponding study, Gardner, Shields, Bredemeier, & Bostrom (1996) examined the relationship between perceived coaching behaviors and team cohesion among baseball and softball players. This study represented an expansion of that conducted by Westre & Weiss (1991) because it examined two sports and included both male and female athletes from two different academic levels. Specifically, the sample in this study consisted of 55 male high school baseball players and 56 female high school softball players as well as 134 junior college male baseball players and 62 junior college female softball players. The athletes in this study ranged in age from 13 to 33 years. This study was designed to examine the relationship between perceived leadership behaviors and team cohesion in high school and junior college baseball and softball players. Again, the researchers used the LSS and the GEQ to measure perceived leadership behaviors and team cohesion, respectively. Statistical analyses of the data did show a significant relationship between perceived coaches' leadership style and perceived team cohesion. Specifically, athletes who perceived their coaches to be high in training and instructional behavior and to exhibit a democratic leadership style (along with low levels of autocratic behavior) and to provide high frequencies of social support and positive feedback also

indicated high perceptions of team cohesiveness. Further, the study showed significant gender and competitive level main effects as well as a significant gender by competitive level interaction effect. That is, male athletes perceived their coaches to be higher in autocratic behavior than did females, and females perceived their coaches as giving significantly more training and instruction, democratic behavior and positive feedback than did males. Also, junior college players perceived their teams as higher in social cohesion and social support than did the high school athletes (Gardner, Shields, Bredemeier, & Bolstrom, 1996). This study builds upon Westre & Weiss' original research in that it examined the effects of coaching behaviors across gender, level (high school and college), and across sport (although softball and baseball are very similar). The results of this study also found significant differences between male and female athletes in their perceptions of their coaches' behaviors and in their evaluations of their team's level of cohesiveness. As the authors of this study indicate, these results suggest that further research on possible gender differences in regard to the relationship between coaches' behavior and team cohesion is necessary.

The third and final study reported in the literature thus far on the topic of coaching behavior and team cohesion employed a different research approach. This study, conducted by Turman (2003), was designed to identify the techniques and strategies that coaches use to either promote or undermine team cohesion. This study was conducted in two phases. In the first phase, the researcher used open-ended questionnaires to assess athletes' perceptions of their coaches' behavior. In the second phase, in-depth interviews (early and post-summer practice sessions) were conducted with individual athletes. Phase 1 participants included 15 male and 15 female college athletes representing a variety of sports. Phase 2 of the study included 12 male, Division I football players ranging in age from 19 to 22 years. This qualitative approach allowed for the researcher to obtain indepth data from the athletes on how they perceive their coaches' behavior to affect them as a team. The study results revealed that the main coaching techniques that undermined team cohesion were based on issues of inequality and the use of ridicule and embarrassment. When a coach was described as showing favoritism towards certain players and showing high levels of negative feedback or punishment in front of other players (i.e., yelling, punishing), the athletes perceived their team's cohesion as being lower because the coach creates a distance between players and limits the interaction between athletes and coaches. The interviews also resulted in the identification of some coaching techniques that promoted team cohesion. These included coaches bragging about players' ability, coaches using sarcasm and teasing (viewed by their athletes as joking around/having fun), as well as coaches giving motivational speeches, giving credit to the upcoming opponent, engaging in team prayer, showing enthusiasm, and employing athlete-directed techniques. These coach behaviors seemed to bring the teammates together to form a unity among the group (Turman, 2003).

As the three research studies described in the previous paragraphs show, there is at least some reason to believe that the behavior of coaches in practice and game contexts can have a positive or negative effect on athletes' perceptions of their team's cohesion. However, these studies only examined the team dynamic of team cohesion and only measured this variable at one point in time. In response to these identified limitations to the current knowledge base, the focus of this research project is on the examination of the relationship between older (collegiate) athletes' perceptions of their coaches' behavior and two aspects of the team's group dynamics-cohesion and collective efficacy. The research and theory on these two aspects of group dynamics are reviewed in the following sections of this chapter.

Team Cohesion

The review of the theory and empirical literature on team cohesion that is contained in the following section has been organized into three subsections. In the first subsection, a definition and explanation of the term cohesion is provided. In the second subsection, a theoretical model of team cohesion (Carron & Hausenblas, 1998) is identified and explained. In the third section, a summary of the empirical research based on this theoretical model of team cohesion is presented

Definitions and Explanation of Team Cohesion.

Within any sport team or group, there is a bond that keeps the group together in order for it to achieve certain goals and/or objectives. The strength of this bond determines the level of cohesiveness of the group. Similar to any psychological construct, cohesion has been defined in a number of different ways. One of the earliest research definitions

was offered by Festinger, Schachter, and Back (1950) who defined cohesion as "the total field of forces that act on members to remain in the group."

In the sport setting, team or group cohesion has been defined by Carron, Brawley, and Widmeyer as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (1998, pg. 3). This definition highlights the notion that cohesion, within sports, is comprised of two main dimensions: task and social (Mikalachki, 1969). Task cohesion represents the degree to which individual members of the group are organized and committed to common goals and tasks. High task cohesion is typically found among members of groups that are united around a common goal that is focused on the performance or productive concerns of the group. In contrast, social cohesion is representative of the attractiveness of the group, or the aspects that make the group appealing to outsiders. High social cohesion is found among groups that get along well with each other aside from the main objective or task of the group. It is also illustrated when friendships or relationships develop among team members which are not solely based on the task at hand. Thus, any sport team could be high in both aspects of cohesion (i.e., all members committed to common goals or objectives and all members of the group like each other), low in both aspects, or low in one and high in the other. As the review of the research on team cohesion will show, these two aspects or dimensions of team cohesion can have differing effects on the group's performance and satisfaction and can also be affected by different antecedents.

Four main characteristics that define cohesion in sport contexts are that cohesion is multidimensional, dynamic, instrumental and affective in nature (Carron & Hausenblas, 1998). Cohesion is multidimensional in that there are several factors that keep a team together. This is highlighted in the fact that there are many factors which keep each group united and working together, and these factors tend to differ from group to group. Secondly, team cohesion is dynamic in nature because a team's level of cohesiveness is in flux from season to season and can also vary significantly across a competitive season. What makes a team work together from the onset of the season does not necessarily relate to the way in which the team functions at the end of its season. Thirdly, cohesion is instrumental because there is a purpose and/or objective to the formation of every group.

A key aspect to the definition of a group is that there is a common fate and mutual benefit among members. Without this instrumental feature, cohering to a group would not necessarily occur. Finally, group cohesion may induce affective responses among team members through the development of social relationships that evolve through continual group interactions. These affective responses can result from either task or social interactions and communications among group members.

Much of the research that has been conducted in the sport setting to examine team cohesiveness has been guided by a theoretical model originally developed by Carron in 1982. This model has been subsequently revised and re-specified by Carron and Hausenblas (1998) as more research-based information about the antecedents and consequences of team cohesion become available. The most recent formulation of this model is explained in detail in the next section of this chapter.

Theoretical Model of Sport Team Cohesion

Carron's (1982) original conceptual model of cohesion in sport teams provided a framework for describing the antecedents, correlates, and consequences of cohesion in sport teams. It was comprised of three parts: the inputs (antecedents of group cohesion; environmental, personal, leadership, and team factors), the throughputs (types of cohesion in sport groups; task and social), and the outputs (the consequences of group cohesion; specified in terms of both group and individual outcomes). This initial model has been revised several times. The most recent and comprehensive version of this model was published by Carron and Hausenblas in 1998 (see Figure 3 for illustration of this version of the model). This model provides an overall framework for identifying, describing, and examining the correlates of cohesion in sport teams. The model is based on the assumption that there are a large number of factors that are related to and/or are predictive of group cohesion. These factors, and team factors. Details regarding each of these four categories of factors are presented in the following paragraphs.

<u>Environmental factors.</u> As illustrated in the model, environmental (or situational) factors are one of the hypothesized correlates of cohesion in sport teams. These factors can be divided into two categories: cultural and organizational considerations and geographical considerations. Cultural and organizational considerations include

contractual responsibility, organizational orientation, normative pressures and level of competition. Contractual responsibility refers to the obligations and/or restrictions that are placed on a team. Examples of this would be eligibility or transfer rules, contractual obligations (pertaining to professional contracts), and geographical restrictions (such as playing locations/proximity for amateur sports). Normative pressures are also situational conditions that affect cohesion. Due to society's low regard for those that quit, pressures to maintain membership among a team or group also play an important role in a team's cohesiveness. The organization's orientation is another situational/environmental factor which affects, or is related to, a group's cohesion. This orientation factor refers to the different goals, achievement processes, and demographics of the participants within the group. In investigating this factor, Spink & Carron (1992) found that social cohesion was high among members of exercise groups within private fitness clubs while task cohesion was high among exercisers in groups within university settings. Thus, individuals' perceptions of group cohesiveness may vary across contexts or settings. The final aspect of cultural and organizational considerations is level of competition. It is possible, for example, that task cohesion may be more important to the team's success and satisfaction at higher and/or more competitive playing levels while social cohesion may be more important at lower, or more recreational, levels of play.

The second category of environmental/situational factors which may affect a group's cohesion includes geographical issues. This facet includes physical and functional proximity, a group's permeability, and the size of the group. Physical and functional proximity concerns the actual physical closeness that the athletes have when participating in the sport, whether it is playing position or locker location. Research has revealed that when teams are closer in physical proximity, friendships and relationships are more apt to develop which contributes to the social cohesion of the group. A group's permeability, or the degree to which it is open to other groups, also influences the team's cohesion. This aspect refers to the degree to which teams interact with other groups or individuals. When a group isolates itself totally, it is unable to utilize outside sources to fulfill its psychological needs and thus draws upon its own membership. Although this is not mentioned as a positive or negative aspect, it does affect the way in which a team unites. The size of the group also plays an important role in how the team coheres in order to work

together. This is explained in more detail within the collective efficacy section, but research has shown that the size of the group does affect its cohesion (see review of this research by Widmeyer, Brawley, & Carron, 2002). When the size of a group increases beyond its optimal potential, the group's cohesion begins to decline. Specifically, as a group increases in size, individual participation decreases, the frequency of arguments and disagreements increases, and members begin to feel as though their individual input or contribution to the group's task is no longer important. Oftentimes too, as the group size increases, social loafing, or the reduction in individual effort when working in groups as opposed to working alone, tends to increase. These provide examples of environmental/situational factors that might contribute in a positive or negative way to a sport team's cohesion.

<u>Personal factors</u>. According to the model, a second set of factors affecting cohesion includes a variety of personal factors. This set of factors can be divided into three categories: demographic attributes, cognition and motives, and behavior. Demographic attributes pertaining to team cohesion relate to individual differences. These are differences found between members of a group, such as age, sex, race, personality, etc. These factors are relevant to the cohesiveness of the group because similarity in personal attributes of group members has been associated with greater cohesiveness. Therefore, factors such as age, gender, or race may play an important role in the group's overall cohesion, depending on the perceptions, attitudes, or beliefs of the individual members of the group. It is also important to identify that this arrow is bi-directional, in that a group's cohesiveness may also affect the individuals' differences (i.e., personality, etc.).

Cognitions and motivations of the group include shared perceptions, self-deception, satisfaction, responsibility for negative outcomes and self-handicapping behavior. Shared perceptions include similarities in attitudes, beliefs and motives toward group functioning and outcomes. A group's cohesiveness operates in a reciprocal fashion with perceptions of attitudes and motives in that a group may form due to similar attitudes and then cohesion develops. Conversely, over time a group's experiences together can foster the development of similar attitudes. Individual satisfaction refers to the individual's feelings of success on the team. Presumably, individuals who perceive higher individual success will also experience greater attraction to the group (i.e., greater perceptions of group

cohesion). Self-deception is when group members overvalue their own performances and undervalue the performances of their opponents. This tends to occur when cohesion is high and is an example of how group cognitions may affect the cohesiveness of the group. Self-handicapping is a mental process which athletes may use prior to an important achievement situation in order to protect their self-esteem (Jones & Berglas, 1978). This process involves externalizing any failure that may occur and internalizing any success. This process serves as a defense mechanism for athletes in order to protect themselves from failure.

Finally, another factor traditionally associated with greater cohesiveness is responsibility for negative outcomes. Research has shown that individuals assume greater responsibility for failures when they perceive their team to be highly cohesive. This aspect highlights the unity felt among team members and the responsibility to one's teammates even when outcomes are undesirable. Individual behaviors are another aspect of personal factors that affect cohesion in sport groups. These behaviors included sacrificing for the group, adherence and commitment to participation, and social loafing. Sacrificing for the team has been examined in relation to its contribution to task and social cohesion because teammates notice sacrificing behaviors may affect the team because if some members are not exerting full effort due to the size of the group, cohesion will be affected either due to motivation or coordination losses. All of these factors together represent personal characteristics that contribute to the team's cohesiveness.

Leadership factors. The third set of factors that are hypothesized within the model to lead to, or affect, cohesion are leadership factors. The mediating influence of leadership is found in leadership behaviors, leadership decision-making styles, the coach-athlete personal relationship, and the coach-team relationship. This antecedent factor is of particular importance to this study because it provides for the possibility that coaching behaviors influence and predict cohesion in sport groups. The coaches' characteristics include types and frequencies of feedback, training and instruction, social support, type of leadership (autocratic or democratic), and reactions to game/pressure situations. The few research studies that have been conducted to examine the link between coaching behavior and team cohesion have been reviewed in a previous section of this chapter.

Team factors. The final correlates of group cohesion are team factors. These factors that affect group cohesion are group size, status, role involvement, group norms, and collective efficacy (Carron & Hausenblaus, 1998). Group size has been previously discussed as a factor which influences cohesion. As the size of the group or team increases, the unity of the group is affected. How individuals on the team understand and accept their roles and become involved in their role affects how a team operates. Role clarity, or the extent to which the athlete understand their role, and role acceptance are important aspects of team functioning and thus, team cohesion. Group norms that are developed are more likely to be adhered to when cohesion is higher amongst the group. Finally, collective efficacy, or the beliefs and attitudes about the team's competence, is the final aspect of team factors that are associated with team cohesion. All of these team aspects affect and influence the way in which the team cohesion, as well as the collective belief in team competence. These correlates are the focus of the current paper.

As outlined in the Carron and Hausenblaus (1998) model (see Figure 3), the four correlates identified and discussed in the previous paragraphs, lead to, or directly affect, the degree to which individual members of a group perceive cohesiveness among their group. This level of cohesion can be reflected in both types of cohesion: task cohesion (degree to which members of a group perceive a high degree and common commitment of the group to their goals and objectives) and social cohesion (the degree to which individual members).

As noted earlier in this paper, most of the research conducted to date on cohesion in sport teams has been guided by the theoretical model just described. For this reason, the review of the empirical research on team cohesion is organized in a manner consistent with the Carron and Hausenblaus (1998) model. In the next section, the empirical research which has looked at the consequences of team (group and individual outcomes) cohesion is reviewed.

Empirical Research on Team Cohesion

Most of the research on team cohesion in sport and physical activity settings has been based on the theoretical model originally developed by Carron (1982) and subsequently revised by Carron and Hausenblas (1998). The majority of these studies have used the Group Environment Questionnaire (GEQ) (Carron, Widmeyer, & Brawley, 1985) to measure team or group cohesion. The GEQ is a self-report questionnaire and includes four subscales – two of which measure task cohesion (group and individual) and two which measure social cohesion (group and individual). Example studies from this research base are reviewed in the following paragraphs.

Spink and Carron (1992) investigated the relationship of group cohesion and behavioral adherence in exercise classes. The study participants included 171 women who were enrolled in noncredit aerobic exercise classes at a university. To ensure that participants were new to the classes, only newly formed classes were sampled. Study results indicated that those who were absent from class more often also scored lower on the Attraction to Group-Social (ATG-S) and Attraction to Group-Task (ATG-T) subscales of the GEQ. These results indicate that exercisers' desire to participate in the group's activities for task and social reasons was reflected in their willingness to continue attending class. Thus low perceptions of group cohesion would elicit low levels of adherence to group activities. In their discussion of these results, the authors recommended further research to examine the relationship between cohesiveness and adherence for male participants, as well as expansion of the performance adherence-relationship to other physical activity settings.

In a follow-up study, Spink (1995) assessed female sport team athletes' perceptions of cohesion. In particular, this study was designed to measure individual athletes' perceptions of team cohesiveness and their intention to participate in the following season. The study sample included 196 females who were competing in a community-based recreational ringette (similar to ice hockey) program and ranged in age from 16 to 22 years. A significant relationship between individuals' perceptions of team cohesiveness and their desire to return for the next season was evident in that those who intended to continue participating scored higher on the Group Integration-Social (GI-S) and Attraction to Group-Social (ATG-S) subscales of the GEQ. This reveals once again, that higher perceptions of social cohesion are related to individuals' decision to continue with an activity and thus prolong their participation.

The majority of the studies conducted to examine cohesion among sport teams have been designed to test the relationship between team cohesion and team performance. In 2002, Carron and his colleagues (Carron, Colman, Wheeler, & Stevens) conducted a metaanalysis of the 46 empirical research studies (both published and unpublished) that had been reported to date investigating the cohesion and performance relationship in sport teams. Several main issues were addressed in this meta-analysis. First, these researchers tested the strength and the direction of the relationship between performance and cohesion. Specifically, questions had been raised in the literature concerning the degree to which high levels of team cohesion might cause successful team performance versus the notion that successful performance might cause high levels of team cohesion. Second, the authors included an assessment of gender and task (sport) type (coactive or interactive) as factors that might affect the cohesion-performance relationship. Third, the meta-analytic procedures examined the degree to which the two types of team cohesion (task vs. social) are related to performance.

The results of these meta-analyses indicated that there was a significant and moderate-to-large relationship between cohesion and performance. Furthermore, the study showed that both task and social cohesion are significantly associated with performance. In regard to task (sport) type and gender, the results showed that task type is not a moderator for the cohesion-performance relationship, in that higher levels of cohesion are related to better performances in both interactive (e.g., basketball) and coactive (e.g., golf) sports. However, there was a significant effect size for gender, with female athletes exhibiting a significantly higher cohesion-performance relationship effect than did male athletes. Finally, the results of this study indicated that there was no difference between the cohesion-to-performance and the performance-to-cohesion relationship. That is, the relationship between these two variables (cohesion and performance) is bi-directional in that there is evidence to show both, that performance affects cohesion and that cohesion affects performance. In their discussion of these results, Carron et al (2002) suggest that continued research is necessary to examine the mediators of the performance-cohesion relationship. In particular, a group dynamic that has been associated with the relationship between cohesion and performance is collective efficacy (Paskevich, 1995). Thus, both cohesion and collective efficacy have been related to performance outcomes in sport teams.

In summary, the research conducted to date on cohesion among sport groups shows that this particular aspect of the team dynamic is related to athletes' performance and satisfaction. A second aspect of the team dynamic is collective efficacy. The more recent studies on team cohesion suggest that a team's collective sense of efficacy may be highly related to a team's cohesiveness. The research and theory on the topic of collective efficacy is reviewed in the next section.

Collective Efficacy

The second dimension or aspect of group dynamics that is addressed in this study is collective efficacy. The research and theory related to this aspect of group dynamics is reviewed in the following sections. This review begins with a discussion of the definition of the construct known as collective efficacy. In the second section, the antecedents and correlates of collective efficacy are reviewed and discussed.

Definitions and Explanation of Collective Efficacy

Motivation and performance within the athletic setting appears to be very much dependent upon one's beliefs or perceptions about her or his ability or competency to successfully accomplish the desired task. These self-beliefs or perceptions are what Bandura (1977) defined in his theory of self-efficacy as "people's judgments of their capabilities to organize and execute a course of action required to attain designated types of performances" (Bandura, 1986, p. 391). The main tenant of Bandura's theory of self-efficacy is that individuals with higher levels of self-efficacy for accomplishing a task will more readily choose to participate in activities that involve the task, will work harder at achieving the task goal, will persist longer when facing adversity, and will achieve at a higher level than those that have lower levels of self-efficacy.

A fairly large amount of research has been conducted in the sport setting to test Bandura's (1977) hypotheses concerning the relationship between individuals' selfefficacy and their performance and behavior in general and in sport-specific settings. Reviews of this research (see, for example, Feltz & Lirgg, 2001 and McAuley & Blissmer, 2002) have concluded that there is a significant and direct relationship between individuals' level of self-efficacy and their performance and behavior. Recently, the concept of individual self-efficacy has been expanded to include the notion of group, or collective, efficacy. Because the current research project focuses on group dynamics, the research and theory pertaining to collective, or group, efficacy is reviewed in the following paragraphs.

The concept of collective (or team) efficacy represents an extension of Bandura's (1977) self-efficacy theory and is defined as "a group's judgment of their conjoint capabilities to organize and execute the courses of action required to produce specified levels of performance" (Bandura, 1997). Thus, the term "collective efficacy" was developed by Bandura as a supplement to the more individualized notion of self-efficacy. When people work together in a group context (e.g., a sport team) to accomplish a group goal (to win or to perform well), then each individual person (athlete) may have both a self-efficacious belief (judgment concerning his/her ability to execute a task) but also a group or collective efficacy belief (judgment concerning the group's ability to execute a task).

The key aspects comprising collective efficacy are shared beliefs among the team, coordinative capabilities between members, collective resources for task success, and situational specificity of demands (Zaccaro, Blair, Peterson, & Zazanis, 1995). For collective efficacy to be present within a team, these key elements should be prevalent.

The first element, shared beliefs, refers to the interdependence among the judgments of the individual members. For collective efficacy to influence the group's performance and productivity it requires more than just a few individuals to have a common attitude. Thus, for collective efficacy to help to define the group for its members, there must be a common faith in the competence and abilities of the group as a whole. Secondly, coordinative capabilities refers to how well members of a group can interact and combine their resources in order to accomplish the desired goals of the group. A group is not merely a sum of its parts, but how well the parts work together in harmony to achieve the desired outcomes. Thirdly, the perception of collective resources refers to the belief held among each member of the group that the team/group has the necessary skills/resources to become successful. This element addresses not only the skills or knowledge necessary to be successful but also the mix of characteristics among the team, which will certainly vary as a function of the sport and situation. The final key element in the definition of collective efficacy is that of situational specificity. The specificity of judgments regarding group capabilities is evident in the belief that the group can

accomplish any task in the specific situation for which the group was developed, but their efficacious beliefs may not be generalizable to other domains (Zaccaro et al., 1995). Thus, this element emphasizes a group's perceived competence in a specific domain. A hockey team, for example, may be very efficacious in its abilities to play hockey but not necessarily confident in its abilities to play basketball.

Team efficacy is presumed to influence the "selection of group activities, the effort directed by the group toward those activities, and the persistence exhibited in the face of adversity" (Carron & Hausenblaus, 1998, pg. 318). If collective or team efficacy is a significant component of group performance and behavior, then the antecedents or correlates of collective efficacy are important to identify. The research and theory relating to these antecedents are reviewed in the following section.

Antecedents of Collective Efficacy

Based on the research and theory concerning antecedents of self-efficacy (Bandura, 1997), it has been hypothesized (see for example Feltz & Lirgg, 2002) that the same five sources of self-efficacy may serve as antecedents or sources of collective efficacy. These five sources are: prior performance, vicarious experiences, verbal persuasion, group size, leadership behaviors, and group cohesion. These are divided into two sets of experiences: the quality of those experiences that are either direct or indirect and the other being the nature of social processes working within the group (Zaccaro et al., 1995).

Prior performance. Prior performance is divided into both those experiences personally felt by the athlete (enactive attainment) and those that are experienced vicariously (modeling influences) (Zaccaro et. al, 1995). Prior performance affects a team's efficacy in that successful past experiences can create an expectancy for future victories. Similarly, unsuccessful performances would be expected to decrease athletes' beliefs in their future abilities. A couple of recent research studies have provided support for the impact of prior performance on athletes' collective efficacy. A study conducted by Feltz and Lirgg (1998), for example, has shown that the collective efficacy beliefs of a sample of intercollegiate hockey players did vary after wins and losses. Specifically, the team's collective efficacy beliefs increased after wins but decreased after losses. In contrast, these researchers found that individual athletes' self-efficacy did not vary as much after team wins and losses. Futhermore, Zaccaro et al (1995) demonstrated that a

stable pattern of success is more likely to lead to higher efficacious beliefs in the future than will unsteady performances of varied success and failure.

<u>Vicarious experiences</u>. The second proposed antecedent of collective efficacy is vicarious experience. Vicarious experiences are also directly linked to collective efficacy in that perceptions of efficacy can be facilitated from watching other teams that are of similar or equivalent talent/ability win or become successful. Groups of similar ability provide for social-comparison and appropriate response techniques (Bandura, 1977, 1986). Although this is not seen as the most influential source of collective efficacy, vicarious experiences do provide important information to a group that could result in increased performance and thus could be an important antecedent of collective efficacy.

<u>Verbal persuasion</u>. The third antecedent of collective efficacy, verbal persuasion of athletes by the leadership among the group, takes the form of positive support and encouragement. Theories and models regarding leadership behaviors have noted that effective leaders encourage their subordinates and enhance their perceptions of abilities through persuasion and exhortation (Bass, 1985). Although these techniques have been recommended in the coaching behavior literature, they have not been widely supported as effective and are viewed as the weakest source in developing team efficacy (Bandura, 1986).

<u>Group size</u>. Group size also affects team efficacy in that the larger a team becomes, the less likely they are to operate efficiently, thus leading to lower expectancies for success. This may occur because larger numbers of athletes per team lead to a decrease in the participation or contribution of each individual member. In addition, more conflict and disagreement may occur, and individuals may tend to be absent more often in groups that have larger size (Bales, Strodtbeck, Mill, & Roseborough, 1951; Gibb, 1951; Indik, 1965; Shaw, 1981). Furthermore, studies have shown that when group size increases, individual effort and performance declines and social loafing is more apt to occur (Latane et al., 1979; Anna, 1992; Williams & Karau, 1991; Zaccaro, 1984). Coordination efforts are more challenging when the size of the group is large, and it is thus expected that the shared belief in the collective group processes would decline. On the other hand, if a group is of optimal size, effectiveness and efficiency is increased, and it is believed that collective efficacy would be heightened.

Leadership behaviors. The leadership of a group is also hypothesized to be a key source or antecedent of collective efficacy. "Leadership actions that persuade and develop subordinate competency beliefs may be as critical a determinant of collective efficacy as the group's prior performance experiences, if not more so" (Zaccaro et al., 1995, p.317). Specifically, coaches' leadership styles and behaviors may have a direct and indirect effect on team functioning. "Sport team coaches spend much of their time developing new skills in team members and exhorting them on game day. These acts can indeed be the strongest influences on a team's sense of efficacy" (Zaccaro et al., 1995, p.318). Yukl (1989) identifies four sets of leadership styles that may be effective in promoting a team's efficacious beliefs.

- 1. Supportive leadership addresses issues of promoting a cohesive and friendly environment.
- Directive leadership clarifies teammate role responsibilities and expectations, as well as setting rules and guidelines.
- 3. Participative leadership is similar to that of a democratic style of leadership in that its focus is on group decision-making.
- 4. Achievement oriented leadership focuses on the outcomes of team goals by setting challenging goals and high standards of excellence.

As noted earlier in this paper, there is research support to show that the behaviors and leadership styles exhibited by coaches do affect their athletes' performance and psychosocial responses in sport contexts. But, as Horn (2002) noted in her recent review of this body of research, the majority of these coaching behavior studies have focused on the effects of coaches' behaviors on *individual* athletes' level of intrinsic motivation, perception of competence, motivational goal orientation, and trait anxiety. Very few research studies have examined the effect of coaches' behavior on group processes or team dynamics. Of those few studies that have focused on group processes, all have focused on group or team cohesion. At this point, no studies have been reported which have examined the effect of coaches' behaviors or leadership styles on the team's level of collective efficacy. Given, however, the importance and significance of the team's sense of collective efficacy, the influence which coaches have on this aspect of group dynamics has been identified as an essential link to examine (see, for example, arguments advanced by

Feltz & Lirgg, 1998). In particular, Zaccaro et al. (1995) suggest that longitudinal research is needed to determine the role which coaches' behavior and leadership styles might play in affecting athletes' level of collective efficacy.

Group cohesion. The fifth and last identified antecedent of collective efficacy is group cohesion. As discussed earlier in this chapter, group cohesion is the dynamic process that is found in a group's tendency to stick together and its resistance to disruptive forces (Gross & Martin, 1953). Thus, as the bond and unity among team members increases, so likely would their shared belief in the team's competence. The relationship between group cohesion and collective efficacy is viewed as reciprocal in that group cohesion is also seen as a consequence of collective efficacy (Zaccaro et al., 1995). Specifically, it is believed that if a group has a shared belief about its competence, then its attraction to the group (cohesion) would also increase. Furthermore, as perceptions of collective efficacy increase, the cohesiveness of the group is also seen to increase. Recently, two studies have been conducted to examine the relationship between group cohesion and collective efficacy in sport settings. These two studies are described in some detail in the following paragraphs.

Spink (1990) examined the relationship between group cohesion and collective efficacy in recreational and elite volleyball teams. The two main purposes of the study were to examine the relationship between the two group processes as well as to determine if competitive level moderates the relationship between the two constructs. Since the relationship between cohesion and performance has been identified as most critical when interaction and dependence among team players is highest, volleyball was chosen because of its coacting style of play. The sample in this study consisted of 53 elite volleyball players and 39 recreational volleyball players participating in an annual volleyball tournament held in Canada. The athletes' perceptions of their team's cohesiveness and collective efficacy were assessed via the Group Environment Questionnaire (GEQ), which included two extra questions pertaining to their collective efficacy expectations: "What placing do you expect to attain in Supervolley?" and "How confident are you that your team will attain this placing?" The two included questions were measured on a seven-point Likert scale ranging from 'not confident' to 'extremely confident.' A demographic
questionnaire was also included to assess the athletes' level of play, years of experience with their current team and years of experience within the sport in general.

The results indicated that for elite volleyball teams, group cohesiveness was significantly related to collective efficacy. Specifically, those who perceived their teams to be high in collective efficacy also perceived higher levels of task and social team cohesion. In contrast, athletes who perceived their teams to be low in collective efficacy perceived lower levels of task and social cohesion. Furthermore, these researchers also found that there was no relationship between collective efficacy and team cohesion among recreational level teams. In discussing these results, the authors identified several limitations to the study. First, the athletes completed all questionnaires without supervision. Thus, the researchers were unsure if athletes responded on an individual basis or as a group. Secondly, the sample size for the recreational group was quite small (N=39) in comparison to the elite sample size (N=53). Such disparity in group size may have accounted for the different results. Lastly, the collective efficacy measurement was a single-item measure and was based on two questions. The questions failed to ask the strength of the individual's efficacious beliefs and thus the validity of the measurement may be in question.

Kozub and McDonnell (2000) replicated but also extended Spink's initial study by exploring the relationship between group cohesion and collective efficacy in rugby teams. These researchers included Zaccaro et al's (1995) notion that qualities of the group may serve as important determinants of collective efficacy. This study's stated purpose was to explore the relationship between collective efficacy and cohesion by using a different measurement of collective efficacy, one consistent with the recommendations of Bandura (1986, 1997). The measurement of collective efficacy that was used by Kozub and McDonnell was based on a seven-item instrument that assessed the individual's beliefs regarding their team's competence in specific skills/tasks that pertain to the specific sport (i.e., tackling, passing, scrimmaging in rugby, etc.). This instrument, which was based on a previous one developed by Feltz and Lirgg (1998) in their work with hockey players, required athletes to rate their team's degree of confidence in each individual skill. The scale indicated an alpha of .78, revealing a satisfactory degree of internal consistency (Kozub & McDonnell, 2000). The results of the study were consistent with Spink and

Zaccaro et al's research in that a significant relationship was found between the measures of group cohesion and collective efficacy. Similarly they found that athletes who perceived their teams as high in task cohesion tended to rate their teams higher in collective efficacy. Also, the task measures of cohesion (GI-T and ATG-T) were better predictors of collective efficacy than were the social measures (GI-S and ATG-S).

In general, the two studies reviewed in the previous paragraphs indicate that there is a significant and possibly a reciprocal relationship between collective efficacy and team cohesion. However, these two studies were limited in at least two ways. First, both studies examined data that were collected at one point in the season. Thus, the relationship between the team's collective efficacy and their perceptions of team cohesion was assessed using a "snap-shot" approach (i.e., examining the direction and strength of the relationship at only one point in time). Given that these two aspects of group dynamics probably fluctuate over the course of a season, it would seem reasonable to assess the relationship between the two variables at more than one point in time in order to examine how the relationship between collective efficacy and team cohesion may shift over the course of a season. The second limitation to the research on the relationship between the two team dynamics variables is that one possible mediating factor has not been included. This mediating factor is the coaches' leadership style and behaviors. Previous research has shown that the coaches' behavior does affect athletes' perceptions of team cohesion. But, at this point, no research has been reported which examined the effect of the coaches' behavior on the team's collective efficacy. Thus, the current study has been designed to examine the links between coaches' leadership style and behaviors and athletes' perceptions of team cohesion and collective efficacy. In the next sections of this chapter, an overview of the proposed project is provided.

Overview of Proposed Study

From a research as well as from an applied perspective, the behavior of the coach may be a very crucial component of the team climate. Specifically, it can be seen as one of the reasons a team is formed (i.e., becoming a member of the team because of the notoriety of the coach, etc.) as well as be a variable in its demise. The coach's behavior can be an aspect that makes the team more attractive to join and can conversely be seen as a disruptive factor that places pressure on the team and on individual members of the team. According to the definition, a cohesive group must be formed for a reason and must have the ability to resist outside forces that could dissect the group. The coach's behavior can be one of these outside forces that either adds pressure, or it can be the nucleus that brings the team together. Either way, the cohesiveness of the group could be highly dependent upon the coaching style of their leader.

As discussed previously in this chapter, the coach's leadership style and behaviors may also be an antecedent factor of the team's perception of collective efficacy. Furthermore, the strength and direction of the relationship between collective efficacy and team cohesion may be affected by the leadership styles and behaviors which the coach exhibits. Although there has been some research conducted to assess the relationship between coaches' behavior and measures of the teams' cohesion, no one study has examined the relationship between coaches' behavior and measures of *both* team cohesion and team efficacy. Thus, the current study is unique to the current research literature in that it combines both aspects of the group's dynamics into one study. In addition, based on recommendations by previous researchers and authors (e.g., Feltz & Lirgg, 1998; Kozub & McDonnell, 2000; Spink, 1990), athletes' perceptions of their team's cohesiveness and collective efficacy were assessed at two points in time (early season and late season). Thus, the relationship between these two aspects of group dynamics were examined or tested at two different points in time. It is also important to note that the assessment of the relationship between the three main variables - coaches' leadership styles and behaviors, athletes' perceptions of their team's cohesiveness, and athletes' perceptions of their team's collective efficacy – were conducted at the individual level of analysis. That is, these three variables were assessed or measured by having individual members of each team complete self-report questionnaires corresponding to their individualized perception or evaluation of their coach's behavior and leadership style and their individual perceptions of their team's cohesion and collective efficacy. Then, the strength of the relationship between the three variables were assessed using these individualized accounts. This procedure is in contrast to one in which the group or team becomes the unit of analysis. In this group procedure, the individual responses of each member of a team (i.e., each athlete's perception of her/his coach's behavior, the team's perception of cohesion and collective efficacy) are aggregated or averaged to form a team score. Then, the relationship between the three

variables (coaches' behavior, team cohesion, and collective efficacy) is examined at the team or group level. The decision in this study to use the individual athlete as the unit of analysis is based primarily on the idea that averaging individual's perceptions across the team may result in a single composite score which does not adequately represent the perceptions of all individual members of a team. That is, individual athletes within a team may hold very different perceptions of their coach's leadership style and behaviors as well as very different perceptions of their team's cohesion and collective efficacy. Averaging or summing these individual scores to obtain a group mean may not then provide a very sensitive or accurate measure of the strength or direction of the team's cohesion and collective efficacy. Therefore, the main analyses in this study used the individual as the unit of analysis.

This study was conducted with two main purposes. First, this study tested the degree to which athletes' perceptions of particular types of coaches' leadership styles and feedback patterns are related to changes in athletes' perceptions of team cohesion and collective efficacy. Based on previous research in the coaching effectiveness literature, the following hypotheses were advanced.

- 1. There will be an overall significant and predictive relationship between perceived coaching behaviors and leadership styles and the changes that occur in athletes' perceptions of their team's cohesion and collective efficacy.
- Athletes who perceive their coaches to be autocratic in leadership style and to provide high frequencies of punishment-oriented and non-informational coaching feedback patterns will show a decrease over the season in perceived team cohesion and collective efficacy.
- 3. Athletes who perceive their coaches to be democratic in leadership style and to exhibit high frequencies of training and instructional behavior, high levels of social support, and high amounts of positive, supportive and informational feedback patterns will show an increase over the season in perceived team cohesion and collective efficacy.

Second, the strength and direction of the relationship between team cohesion and collective efficacy was examined at two points in time – early season and late season. Due

to the lack of research on the changing nature of the relationship between these two variables, specific hypothesis were not advanced. However, it was expected that the strength of the relationship between team cohesion and collective efficacy would be greater at the end of the season than at the beginning of the season. That is, athletes who perceive their teams to be high in cohesion would also perceive higher levels of collective efficacy, and athletes who perceive their teams to be low in cohesion would perceive lower levels of collective efficacy. The relationship between these variables was expected to be stronger after the season was over than at the beginning of the season.

In addition to the two main analyses identified in the previous paragraphs, the data obtained from this study were also examined to assess for possible gender and sport type differences in regard to the strength and direction of the relationship between the athletes' perceptions of their coaches' behavior and their perception of their team's cohesion and collective efficacy. These secondary analyses were conducted based on previous research in the collective efficacy and team cohesion literature which has indicated some differences across sport type and gender in athletes' perceptions of the team dynamic.

CHAPTER THREE

METHODOLOGICAL PROCEDURES

The purpose of this study was to use a quantitatively-based, correlational design to assess the strength of the relationship between perceived coaching behaviors, team cohesion, and collective efficacy. Specifically, the study was conducted to examine the changes in athletes' perceptions of their team's efficacy and cohesion over the course of a season and to determine whether these changes were related to their perceptions of their coaches' behaviors.

Data were collected by administering a set of self-report questionnaires to Division I college athletes at the beginning of the season (n<3 games – Wave 1) and again at the end of the season (n<3 games remaining – Wave 2). In the following sections, the study participants, the instrumentation, and the data collection procedures are described.

Study Participants

The participant sample at Wave 1 was comprised of 250 male and female athletes from a variety of Division I universities located primarily in Midwestern and Western states. Due to attrition of participants over time and to difficulties with one data collector, the final study sample (i.e., those who completed both Wave 1 and Wave 2 questionnaires) included 180 athletes. This sample consisted of male and female athletes ranging in age from 17 to 23 years of age (mean =19.92 yrs, std dev = 1.40), representing a variety of team and individual sports (i.e., hockey, soccer, field hockey, synchronized skating, basketball, gymnastics, swimming/diving, and volleyball). According to racial affiliation of the athletes, 92% of the sample identified as Caucasian and less than 1% identified as African American, Native American, Asian American, or other racial affiliations. In terms of year in school, the sample consisted of 63 first-year students, 48 sophomores, 34 juniors, 35 seniors, and 1 fifth year student. No other criteria were used to recruit participants. A breakdown of participants by gender and primary sport (as indicated by each participant) is provided in Table 5. All athletes volunteered to participate and were informed that they could discontinue their participation in the study at any time. The research procedures were reviewed and approved by the Miami University Committee for the Protection of Human Participants. Details regarding the instrumentation and research procedures are described in the following sections.

Instrumentation

As noted previously, a series of self-report questionnaires were administered to all study participants at two timepoints during their NCAA competitive season. The questionnaires that were administered at Wave 1 (early competitive season) and Wave 2 (late competitive season) are described in the following paragraphs.

Demographic Questionnaire.

Each study participant completed a demographic questionnaire (see Appendix B) that asked her or him to report gender, sport, age, year in school, and racial/ethnic identification. This demographic questionnaire also included questions to assess the athlete's level of enjoyment and feelings of success upon the completion of the season. The success and enjoyment questions are based on a 10-point Likert-type scale with 1 representing very low (very unsuccessful) feelings of enjoyment and success at the end of the season and 10 representing very high (very successful) feelings. The data collected in this study was gathered as part of a larger study. The enjoyment questions on the demographic question are relevant to another researcher's purpose, thus the responses to these questions will not be pertinent to any of this study's purpose. The demographic questionnaire was completed by all athletes at the Wave 2 (end of season) measurement. Coaching Behavior Scales

Two self-report questionnaires were used to assess athletes' perceptions of their coaches' behavior. Both of these questionnaires were administered at the end of the athletes' competitive season (i.e., at the Wave 2 data collection timepoint).

Leadership Scale for Sports. The first questionnaire used was the Leadership Scale for Sports (LSS) which was developed by Chelladurai and Saleh (1978; 1980) to assess athletes' perceptions of their coaches' leadership style and behaviors along five different dimensions or subscales (see Table 1 for listing and description of subscales). The LSS consists of 40 items that ask the athlete to indicate the degree to which her or his coach exhibits the type of behavior described in the individual items. The response format consists of a five-point Likert-type scale with numbers representing athletes' perceptions that their coach always (often, occasionally, seldom or never) exhibits that type of behavior. The 40 individual items in the LSS are divided into five subscales, with each subscale representing a particular type of coaching leadership style or behavior. The autocratic behavior subscale measures athletes' perceptions of the degree to which their coaches exhibit a controlling and authoritarian decision-making style while the democratic behavior subscale assesses athletes' perceptions of the degree to which their coaches exhibit a leadership style that encourages participation by the athletes in decisions relevant to the team. Items on the training and instruction subscale describe coaches who exhibit a strong focus on training and teaching. That is, this type of coach is perceived to conduct strenuous practice sessions, to select appropriate drills, and to emphasize the teaching of sport skills. The social support subscale includes items that assess the degree to which athletes perceive that their coaches create warm interpersonal interactions with their athletes and provide a comfortable or nurturing environment. Items on the positive feedback subscale are indicative of coaches who provide high frequencies of reinforcement or praise in response to their athletes' performance attempts.

The items comprising the LSS were developed in two stages. In the first stage (Chelladurai & Saleh, 1978), the researchers developed or identified 99 items based on the theoretical and empirical literature in the general leadership literature. The resulting 99item questionnaire was administered to 160 Canadian university male and female physical education students who evaluated each item on a five-point Likert-type scale using a stem of, "The coach should...". A principal components analysis revealed a five-component solution.

In the second phase of scale development (Chelladurai & Saleh, 1980), the researchers administered two versions of the scale to 223 male collegiate varsity athletes. One version of the scale included the stem, "I prefer my coach to...," while the second version included the stem, "My coach..." Principal components analysis of this data supported the five-factor solution, and the highest loading items on each of the five factors were retained.

A fairly large number of studies have been conducted with the LSS (see reviews by Chelladurai & Riemer, 1998; Chelladurai, 1993; and Horn, 2002). In general, these studies have found support for the reliability and validity of the LSS. Recently, Chelladurai and Riemer (1998) reviewed the research information obtained to date regarding the LSS and also conducted a structural equation modeling analysis to examine the underlying factor structure of the LSS. In their discussion of the results of this research, they concluded that there is adequate support for the reliability and validity of the LSS as a measure of coaches' leadership style and behaviors. However, they do recommend additional research using both quantitative and non-quantitative procedures to identify a more comprehensive list of leader behavior dimensions and to develop more appropriate items to assess these leadership dimensions. Chelladurai and Riemer also recommended that future researchers might consider adding additional items to the autocratic behavior subscale of the LSS as this subscale has consistently been found to be low in internal consistency. For the current study, three items will be added to the LSS. These items include: (a) "Does not take into account athletes' suggestions when making decisions," (b) "Controls what athletes can and cannot do," and (c) "Makes decisions regardless of what athletes think." These items were used by Price and Weiss (2000) in a recent study and were found to improve the internal consistency of the autocratic subscale to an alpha value of .71.

<u>Coaching Feedback Questionnaire</u>. The second self-report questionnaire used in this study to assess athletes' perceptions of their coaches' behavior was the Coaching Feedback Questionnaire (CFQ). This questionnaire assesses athletes' perceptions of the type of feedback their coaches give them in response to their performance successes and failures. The CFQ consists of 16 items representing eight different types of feedback responses (see Table 3 for outline and example of each feedback type). Three of the eight types represent feedback given by coaches in response to players' successful performances, and the remaining five describe different types of feedback given by coaches in response to players' unsuccessful performances (e.g., performance errors or mistakes). In responding to the 16 items on the CFQ, the athlete uses a five-point Likert-type scale indicating the degree to which his or her coach typically responds with that type of feedback. As noted in Chapter 2, the CFQ was developed as a questionnaire version of the Coaching Behavior Assessment System (CBAS) (Smith et al., 1977). The CBAS was originally developed over several years by a team of researchers who observed and recorded the behaviors of youth sport coaches during practice and game sessions. Transcriptions of the behavioral descriptions were then content analyzed to develop a 12-category set of coaching behaviors. Subsequent data collection projects were conducted to assess the reliability and validity of the CBAS (see review of this research by Chelladurai and Riemer, 1998). The CFQ was developed to assess a subset of the original 12 categories from the CBAS. In particular, the CFQ only assesses players' perceptions of their coaches' feedback behavior. Initial estimates of the reliability and validity of the CFQ have demonstrated support for this scale (Amorose & Horn, 2000; Black & Weiss, 1992).

Athletes' responses on the 12 items from the CFQ were divided into three subscales. These three subscales were determined based on two research studies conducted by Amorose and Horn (2000, 2001) with two different samples of Division I athletes. Specifically, Amorose and Horn (2000) conducted a principal-axis factor analysis in order to determine the structure underlying college athletes' perceptions of their coaches' feedback. Initial factors were extracted using a minimum eigenvalue of 1.0, and varimax rotation resulted in the identification of three conceptually distinct factors. A minimal loading of .40 was used in the interpretation of these factors (Tabachnick & Fidell, 1996). The items that loaded highly on Factor 1 were characterized by high frequencies of positive, encouraging, and informationally based feedback and low frequencies of non-reinforcement as responses given to athletes following performance successes and errors. Thus these loadings were labeled as positive and informational feedback. Items that loaded highly on Factor 2 were representative of feedback styles high in punishment-oriented feedback given in response to athletes' performance errors. This factor is thus labeled punishment-oriented feedback. Lastly, the factors that loaded highly on Factor 3 were characterized by a coaching style that clearly ignores athletes' performance successes and failures and are thus labeled as non-reinforcement or ignoring mistakes. Amorose and Horn (2000) obtained alpha coefficients ranging from .72 to .83 for the three subscales. In a follow-up study using a different sample of intercollegiate athletes, Amorose and Horn (2001) again obtained acceptable to high (.70 or higher) alpha coefficients for the three subscales. Based on these results, these three subscales were also used in the current study.

Team Cohesion Scale

To measure athletes' perceptions of their team's cohesiveness, the Group Environment Questionnaire (Carron, Widmeyer, & Brawley, 1985) was administered. The GEQ is an 18-item scale that assesses four different aspects or dimensions of group cohesion. The four dimensions were identified by Carron and his colleagues based on a review of the theoretical and empirical literature on group dynamics. Identification of the four constructs are based on two assumptions. First, Carron et al. assume that there is a need in measuring team cohesion to distinguish between the group and the individual. That is, the social cognitions that each athlete holds about the cohesiveness of her or his team are related to the group as a totality and to the way in which the group satisfies the needs and objectives of the individual group member. Thus, the items in the GEQ are categorized into two groups: (a) group integration (individual's perception of unity within group as a whole), and (b) individual attractions to the group (individual's personal feelings towards the group that is reflected in his/her actions and behaviors). The second assumption on which the CEQ is based is that team cohesion has two main components or dimensions: (a) task-oriented (degree to which the group is oriented toward common goals and objectives), and, (b) social-oriented (degree to which individual members of the group are socially attracted to each other). Thus, the four subscales contained in the GEQ are: (a) Group Integration-Task (GI-T); (b) Group Integration-Social (GI-S), (c) Individual Attraction to the Group-Task (ATG-T), and (d) Individual Attraction to the Group-Social (ATG-S)

Cohesion, which is a team dynamic, can be measured through the perceptions of the individual according to their ideas on the structure of their group, the social situations, and the values and beliefs he/she holds (Carron et al., 1985). Thus, these four subscales differ in the standpoint from which the respondent is answering, in that GI-T and GI-S are formulated as 'our' and 'we' responses and ATG-T and ATG-S questions are from the 'I' and 'me' perspective. The final version of the GEQ consists of 18-items and the athletes'

responses are based on a 9-point Likert scale that range from "strongly agree" to "strongly disagree."

Content, concurrent, predictive, factorial and construct validity were all assessed during the initial construction of the GEQ (see Carron et al., 1985), as well as in the subsequent studies that have used the questionnaire (see review of this research by Carron, Brawley, & Widmeyer, 1998). Reliability for the GEQ focused on two aspects; its stability over time (test-retest reliability) and its internal consistency. Due to the nature of the questionnaire (unity of a group), test-retest reliability was deemed irrelevant because of the changing dynamics of a group over time. That is, any change observed over time in the stability of the responses could not necessarily be attributed to the questionnaire itself. Therefore, the focus of reliability in the construction of the GEQ as well as with subsequent studies using the questionnaire was on the internal consistency of the four subscales. As Carron et al indicate in their 1998 review of this research, acceptable to high estimates of internal consistency have been found. The GEQ was administered to all study participants at two timepoints in the season (Wave 1 – early season and Wave 2 – late season) in order to assess the possible change in the athlete's perception of their team's cohesion over the course of a season.

Collective Efficacy Assessment

Athletes' assessments of their team's collective efficacy was measured using the Collective Efficacy Questionnaire (CEQ) developed by Feltz and Lirgg (1998). The survey is designed to measure the athletes' perception of their team's abilities to organize and perform to their desired level. The different team aspects are preceded by the phrase, "Rate your team's confidence in that your team has the ability to..." and then followed by different items, such as, "outplay the opposing team," "keep cool under pressure," and "work hard as a team." The CEQ is a 49-item questionnaire which contains 20 actual scale items and 29 filler items. The 20 actual scale items are divided into five subscales: ability, unity, persistence, preparation, and effort. The athletes are asked to rate their confidence on a 10-point Likert scale (0-9). A 9 on the scale represents "extremely confident," a 4-5 on the scale signifies "moderately confident," and a 0 on the scale means "not at all confident."

The CEQ was originally developed by Feltz and Lirgg (1998) as a multidimensional measure that reflects the individual members' assessment of the degree to which their group has the resources needed to meet the demands of their sport. Initial items were developed and administered to several samples of college and high school athletes. Factor analysis (exploratory and confirmatory) indicated support for the five-factor solution. Internal reliability estimates indicated that all subscales were at or above .85, indicating high internal consistency. Additional work has recently been completed on the questionnaire in order to provide a general sport measurement of collective efficacy (Feltz, Nov, 2003, personal communication). The most recent format of the questionnaire was used in this study so that data could be collected from a diverse group of sports. The CEQ was administered in the current study at both Wave 1 (early season) and Wave 2 (late season) measurements to assess the athlete's change in perception over time.

Data Collection Procedures

The process of recruitment began with a team of three researchers contacting Division I coaches in the Midwest and Western state regions prior to the beginning of their competitive season. The coaches were given information regarding the overall purpose and procedure of the study. The possible participants were also informed that the study consists of two parts: Wave 1 to be administered in the beginning of the season and Wave 2 to be administered at the end of the season (towards the end of regular season play). For those coaches who agreed to participate, the researcher set up an appointment to meet with their teams before or after a practice session to administer Wave 1 of the surveys. Questionnaires were administered by the main team of researchers at their home institution. For surveys completed at distant schools, a researcher at the institution within the field of sport psychology assisted in this process. The Wave 1 set of surveys includes the GEQ (to measure athletes' early season perceptions of their team's cohesiveness) and the CEQ (to measure athletes' early season perceptions of their team's collective efficacy). At the Wave 1 data collection meeting, the researcher provided all athletes with a written and verbal explanation of the study, and the athletes were given an assent form pertaining to their participation in the study as well as contact information for the members of the research team.

Athletes who agreed to participate in the study were then administered the Wave 1 questionnaires. Participants were read a script explaining that they were given as much time as needed and that their answers would remain confidential (See Appendix A for the researcher's script). Coaches were not present during the time when the athletes completed the questionnaires and were told that they would not be provided with any information regarding their team's responses but would be given overall study results once they were final. All Wave 1 data were collected at the beginning of each team's competitive season (i.e., sometime within the time period between the first and the third competitive events of the season).

Wave 2 data was collected from all teams at the end of their regular competitive season. The same procedures from Wave 1 were followed in Wave 2 of the study. The data collection occurred within the time period of the last three regularly scheduled games, meets, or matches. Wave 2 survey packets included: (a) the demographic questionnaire; (b) the LSS (to measure perceived coaching leadership styles and behaviors), (c) the CFQ (to measure perceived coaching feedback patterns; (d) the GEQ (to measure athletes' perceptions of their team's collective efficacy at the end of the season).

Data Analysis Procedures

This study is correlational in nature because it is designed to test the strength and direction of the relationship between three sets of variables. Specifically, the intent of this study is to assess the relationship between athletes' perceptions of their coaches' behaviors and the changes that occur over the season in athletes' perceptions of their team's cohesion and collective efficacy. Prior to testing the hypotheses, the internal consistency of all study variables was calculated using Cronbach's (1951) alpha coefficient. This was followed by descriptive statistics and a check for multicolinearity. To test whether changes occurred over the course of the season in athletes' perception of their team's cohesion and efficacy, a repeated measures MANOVA was conducted. Additionally, to determine the relationship between coaching behaviors and the athletes' change in perception of their team's cohesion and efficacy, a multivariate multiple regression and follow-up canonical correlation analysis was conducted. Furthermore, secondary analyses were conducted to determine if the relationships between the variables of interest

(perceived coaching behaviors and perceived team cohesion and collective efficacy) vary as a function of the athletes' gender and sport type (individual and team).

CHAPTER FOUR

RESULTS

The purpose of this study was to use a quantitatively-based, correlational design to assess the strength of the relationship between perceived coaching behaviors, team cohesion, and collective efficacy. Specifically, the study was conducted to examine the changes in athletes' perceptions of their team's efficacy and cohesion over the course of a season and to determine whether these changes were related to their perceptions of their coach's behaviors.

In order to measure this relationship, a series of questionnaires were administered to 180 Division I collegiate athletes at the beginning and end of their NCAA competitive season. The results from this data collection are presented in the following sections. The first section includes descriptive data for all study variables along with a discussion of the results of these findings.

The second section contains the results from three preliminary analyses. In the first of these preliminary analyses, alpha reliabilities were run for each subscale of the GEQ, CEQ, LSS, and the CFQ. The second analysis was run to test for differences between those study participants that completed both Wave 1 and Wave 2 and those that dropped out of the study before Wave 2 (did not complete both waves). In the third analysis, a repeated measures MANOVA was run to determine if athletes' perceptions of their team's cohesion and efficacy changed over the course of the season.

The third section of this chapter presents the main analyses which correspond to the two main study purposes. Specifically, the first set of main analyses was conducted to test the strength of the relationship between perceived coaching behavior and changes in athletes' perceptions of their team's cohesion and efficacy over the course of a season. A multivariate multiple regression analysis and follow-up canonical correlational analyses were conducted. The second set of main analyses was conducted to examine the relationship between athletes' perceptions of collective efficacy and team cohesion over the course of a season. Again, a multivariate multiple regression analysis along with follow-up canonical correlational analyses were used.

The fourth section of this chapter presents some follow-up analyses, which were conducted to provide additional information regarding the relationship between study variables. Specifically, some gender and sport type comparisons were conducted and are reported in the fourth and final section of this chapter.

Descriptive Data

Means, standard deviations, and ranges for all study variables were calculated. These data are presented in Tables 6-8.

Coaching Behaviors

Table 6 presents the descriptive data corresponding to athletes' perceptions of their coaches' leadership style and feedback pattern, as assessed by the LSS and the CFQ. This table presents the means, standard deviations, and ranges for the athletes' perceptions of their head coach. These results show that there was a wide range of perceived coaching behaviors (i.e., calculated scores for most subscales indicated use of almost the entire possible range). Overall, this data suggests that the athletes as a group perceived their coaches to be particularly high in training and instructional behavior (mean=3.57 on a 5point scale) and to provide high frequencies of positive feedback (mean=3.61 on a 5-point scale). Conversely, this data also reveals that the athletes as a group perceived their coaches to exhibit relatively lower levels of autocratic behavior (mean=2.85 on a 5-point scale). Data from the CFQ revealed that the athletes perceived their coaches to exhibit high levels of reinforcement and information feedback (mean=3.26 on a 5-point scale) and low levels of punishment-oriented feedback (mean=2.24 on a 5-point scale). Again, however, the size of the standard deviations and the generally wide range of scores indicates that there is considerable inter-individual variability in athletes' perceptions of their coaches leadership styles and feedback behaviors.

Collective Efficacy

Table 7 presents the descriptive data for the five subscales of the Collective Efficacy Questionnaire (CEQ). This table includes the means, standard deviations, and ranges for the early season, late season, and change or discrepancy scores (late season mean minus early season mean). The results from this descriptive data show that in general, the athletes had a high degree of collective efficacy as measured at both the early season and late season measurements (i.e., all means are greater than 6.52 on a 9-point

Likert scale). In particular, athletes indicated a high degree of unity, preparation, and effort at the early season measurements (as all means are above 7.61 on a 9-point Likert scale) and a high degree of unity, persistence, and preparation at the late season measurement (as all means are above 6.74 on a 9-point Likert scale). However, this descriptive data also reveals a considerable amount of variability, as all scores except the early season effort subscale have a standard deviation greater than 1.02. In addition, the range of the changes scores (late season minus early season) shows a high degree of inter-individual variability in the degree to which athletes increased, decreased, or stayed the same in their collectively efficacious beliefs over the season.

Dependent (paired-sample) t-tests were conducted to test whether athletes' subscale scores on the collective efficacy inventory changed significantly over the season. As indicated by the asterisks in the mean column, all subscales scores showed a significant (p<.01) decrease from early to late season. This indicates that the athletes as a group showed a significant decline in all dimensions of their perceived collective efficacy over the season.

Team Cohesion

In regard to the athletes' perceptions of their team's cohesion, Table 8 presents the descriptive data for the four subscales of the Group Environment Questionnaire (GEQ). This table includes the means, standard deviations, and ranges for the early season, late season, and change or discrepancy scores (late season mean minus early season mean). The results from this descriptive data show that in general, the athletes had a high degree of team cohesion as measured at both the early season and late season measurements (i.e., all means are greater than 5.84 on a 8-point Likert scale). In particular, athletes indicated a high degree of Attraction to Group-Social (ATG-S) and Group Integration-Social (GI-S) at both the early and late season measurements (as all means are above 6.62 on a 8-point Likert scale). However, this data also reveals a considerable amount of variability, as all scores have a standard deviation greater than 1.09.

Again, dependent (paired-sample) t-tests were conducted to determine if the athletes, as a group, showed significant change from early to late season in their perceptions of team cohesion. As indicated by the asterisks, significant differences were obtained for all subscale scores. Furthermore, inspection of the early and late season

means indicates that the athletes as a group showed decreases over the season in all aspects of perceived team cohesion. Again, however, the range of the change scores shows considerable inter-individual variability in the size and the direction of these changes. Thus, some athletes showed increases, some showed decreases, and some maintained the perceptions of their team's cohesiveness over the season.

In summary, the results from the descriptive data presented in the previous section provide some initial information regarding athletes' perceptions of coaching behavior, team cohesion, and collective efficacy. First, these descriptive results suggest that in general, athletes' perceptions of team cohesion and collective efficacy changed over the course of a season. Specifically, it appears as though athletes' perceptions of these variables declined from early to late season. Additionally, these statistics reveal that the athletes' responses covered a complete range of scores, meaning the sample was quite diverse in their responses across the season.

Preliminary Analysis

The internal consistency of all study measures was calculated using Cronbach's alpha. The obtained values are presented in Table 9. The majority of the subscales demonstrated coefficients greater than .70, indicating an acceptable level of internal consistency (Nunnally, 1978). There were, however, a few measures that fell below the .70 criterion. These included the early season ATG-T (.57), early season ATG-S (.63), and early season GI-T (.67) from the GEQ. Given that the late season alpha coefficients for these three subscales were all above .70, the fact that the GEQ has previously been demonstrated to be reliable and valid for this population of athletes, and based on the importance of these subscales to the study purpose, these variables were maintained. However, the lower coefficients at the early season timepoint do suggest some caution in regard to the internal reliability of this assessment timepoint

The second preliminary analysis was conducted to test if the study participants who completed only Wave 1 of this data collection project (i.e., the 70 athletes who were not included in the final study sample) were different than those participants who completed both phases/waves of the project (i.e., the 180 athletes who comprised the final study sample). To compare these two groups of athletes, a one-way multivariate analysis of variance was conducted. In this analysis, the dependent variables were the Wave 1 team

cohesion and collective efficacy subscale scores (the only data collected at Wave 1), and the two comparison groups were the 70 athletes who did not complete Wave 2 and the 180 athletes who completed both waves. The results of this early season comparison indicated no significant multivariate differences between the two groups (p<.48). That is, the two groups did not differ significantly in their perceptions of their team's cohesion and collective efficacy at the Wave 1 timepoint. Thus, this reveals there was no difference between the early season responses of the study's 180 participants and those that dropped out of the study.

The third preliminary analysis was conducted to determine if there were time and/or gender differences in athletes' perceptions of team cohesion and collective efficacy. To test this possibility, a 2x2 (Gender by Time) mixed-model multivariate analysis of variance with repeated measures on the second factor was conducted. The dependent variables for this analysis were athletes' subscale scores on the GEQ and the CEQ. The results of this analysis revealed a significant time main effect, Wilks' Lambda = .64; F(9, 167) = 10.49, p<.000. All univariate F-values were significant and all discriminant loadings were above .30, indicating that the athletes as a group showed significant declines in all of the CEQ and GEQ subscale scores from early to late season. These multivariate results are consistent with the results of the univariate (paired samples t-tests) analyses presented in Tables 7 and 8.

In addition to the significant time main effect, there was also a significant Gender main effect, Wilks' Lambda = .76, F(9, 167) = 5.73, p<.000. Examination of the univariate F-values and the discriminant loadings indicates that female athletes scored significantly lower than did their male peers on all of the collective efficacy subscales and on the group social subscale from the GEQ. No gender differences were found on the other three GEQ subscales.

A Gender by Time interaction effect was also found to be significant, Wilks' Lambda = .87, F(9, 167) = 2.90, p<.003. This significant effect indicates that the male and female athletes' perceptions of their team's group cohesion and collective efficacy changed in different ways over the season. Examination of the univariate F-values and discriminant loadings showed that the interaction effect was specific to the GEQ subscales only (i.e., no significant Gender by Time interactions were found for the CEQ subscales). Furthermore,

post-hoc means comparison tests showed that for all four of the GEQ subscales, male athletes showed greater decreases than did the female athletes from early to late season in their perceptions of their team's social and task cohesion. These gender by time differences were particularly evident in the two social cohesion subscales with males showing a significant decrease in the Attraction to Group-Social subscale from early (mean = 7.22) to late season (mean=6.71) while females showed no significant change from early to late season (6.72 to 6.68). Similarly, for the Group Integration-Social subscale, male athletes again showed a significant and large decrease from early to late season (7.46 to 6.56) while female athletes did not show significant change (6.61 to 6.64). For the two task subscales, male athletes decreased significantly from early to late season on both the Attraction to Group-Task (7.0 to 5.9) and the Group Integration-Task (6.98 to 6.03) while female athletes showed smaller decreases for both the Attraction to Group-Task (6.40 to 5.78) and the Group Integration-Task (6.28 to 6.07) subscales. These significant gender by time interaction effects indicate that the main study analysis (relationship between perceived coaching behaviors and athletes' perceptions of their team's cohesion and collective efficacy) should be assessed for male and female athletes separately. These gender-specific analyses were conducted and are reported in that last section of this chapter.

Main Study Analyses

The current study was conducted for two main purposes. The first purpose was to examine the relationship between perceived coaching behaviors, collective efficacy and team cohesion. Specifically, this study was conducted to determine if there would be a relationship between athletes' perceptions of their coaches' behaviors and the changes over the season in athletes' perceptions of their team's cohesion and efficacy. The second main purpose of this study was to examine the relationship between athletes' collective efficacy and team cohesion, especially as these two constructs might change over the season. The following sections will provide the results from these two main analyses.

Coaching Behavior, Team Cohesion and Collective Efficacy

The first main purpose of this study was to test the relationship between athletes' perceptions of their coaches' styles and feedback patterns and changes that occur in athletes' perceptions of their team's cohesion and efficacy over the course of a season. In

order to determine whether various coaching behaviors could predict the changes that occur in athletes' perceptions of team cohesion and efficacy, a multivariate multiple regression analysis with follow-up canonical correlation analysis was conducted. The criterion or dependent variables for this analysis were the changes scores for the four subscales of the GEQ and the five subscales of the CEQ. The predictor variables were the five subscales of the LSS and the three subscales of the CFQ. The results of this regression analysis indicated an overall significant multivariate relationship, Wilks' Lambda = .48, F(72, 980) = 1.76, p<.000. These results indicate that a significant and predictive relationship exists between the set of coaching behavior variables and the change scores from the GEQ and the CEQ. Examination of the univariate F-values indicated that eight of the nine dependent variables. The only exception was the change score corresponding to the GEQ subscale of Attraction to Group-Social.

A follow-up canonical correlation analysis was conducted to provide further information regarding the relative contribution of each variable to the overall multivariate relationship. Results from this analysis revealed one significant canonical function. Table 10 provides the canonical loadings for this function. The canonical loadings were used to examine the relationship between perceived coaching behaviors and the changes in athletes' perceptions of team cohesion and collective efficacy. Consistent with Pedhauzer (1982), a canonical loading of .30 or higher was considered to be significant. Examination of these canonical loadings indicates that all of the dependent and predictor variables contributed significantly to the multivariate relationship. However, the highest loadings for the dependent variable set (the criterion variables that most contributed to the overall relationship) were for Individual Attraction to Group-Task (ATG-T), Group Integration-Task (GI-T), unity, persistence, preparation, and effort. The predictor variables that contributed the most to the relationship were punishment-oriented feedback, nonreinforcement/ignoring mistakes, autocratic behavior, and training and instruction. An examination of the loadings and their corresponding signs suggests that there was a positive relationship between the changes that occurred over the season in athletes' perceptions of team cohesion and collective efficacy and their perceptions of their coaches' democratic behavior, training and instruction, positive feedback (LSS), social support, and positive and informational feedback (CFQ). Conversely, a negative relationship was found between athletes' perceptions of the same team dynamics and coaches' autocratic behavior, punishment-oriented feedback, and non-reinforcement/ignoring mistakes. Thus athletes who perceived their coaches to exhibit higher frequencies of democratic behavior, training and instruction, positive feedback, social support, and positive and informational feedback showed an increase in their perceptions of team cohesion and collective efficacy over the season. On the other hand, athletes who perceived their coaches to be higher in autocratic behavior and to provide high frequencies of punishment-oriented feedback and nonreinforcement/ignoring mistakes exhibited a decrease in their perceptions of team cohesion and collective efficacy over the season.

According to Pedhauzer (1982) a redundancy index (i.e., the amount of shared variance between the set of predictor and criterion variables) greater than 10% is considered significant and meaningful. The redundancy index for this follow-up canonical correlation analysis revealed that the predictor variables (i.e., perceived coaching behaviors) accounted for 57.4% of the variance in the criterion variables (i.e., the changes in perceptions of collective efficacy and team cohesion from early to late season). Thus, the results from this analysis suggest that the combination of coaching behavior variables accounted for a significant, large, and meaningful amount of the variance in the changes that occurred in Division I college athletes' perceived levels of team cohesion and collective efficacy over the course of a season.

Relationship between Collective Efficacy and Team Cohesion

The second focus of this study was to examine the relationship between team cohesion and collective efficacy. In contrast to previous studies (Spink, 1990; Kozub & McDonnell, 2000), this study sought to examine the relationship between these two aspects of group dynamics over the course of a season. Again, a multivariate multiple regression analysis with follow-up canonical correlation analysis were used. The dependent variables for these analyses were the four changes scores for the GEQ, and the predictor variables were the five change scores for the CEQ. Examination of the univariate F-values indicated that all of the dependent variables (the four change scores for the GEQ) were significantly related to, or predicted by (p<.01), the set of predictor variables. The canonical correlation analysis indicated one significant canonical variate (R=.57, R =.32). Examination of the

canonical loadings (see Table 11) indicates that 3 of the 4 dependent variables contributed significantly to the multivariate correlation while all 5 of the predictor variables were significant contributors. The relative size and sign of the loadings indicates that the two task measures of group cohesion (Attractions to Group-Task and Group Integration-Task) were significantly and positively related to all 5 of the collective efficacy subscales (with highest loadings on the unity and effort dimensions). These results suggest that athletes whose perceptions of collective (team) efficacy increased over the season also showed corresponding increases in perceived team cohesion (especially task) over the season.

The redundancy index for this analysis was 64.74%, indicating that a very high amount of the variability in the changes athletes showed in their perception of team cohesion over the season could be explained by the changes that occurred in their perceptions of collective efficacy.

In addition to examining the relationship between athletes' perception of their team's cohesion and collective efficacy over the season through the use of change scores (late season minus early season subscales scores), two additional multivariate multiple regression analyses with canonical correlation analyses were conducted. These two analyses tested the strength of the relationship between athletes' perceived team cohesion and collective efficacy at both early and late season timepoints separately. The results of these two analyses indicated a significant multivariate relationship between the two sets of variables at both timepoints. In addition, the specific canonical loadings indicated the same positive relationship between the two sets of variables at both timepoints. However, the redundancy indices for the two analyses indicated a higher correlation at the late season timepoint (81.47%) than at the early season timepoint (54.24%). Thus, it does appear as if the relationship between athletes' perception of their team's cohesion and collective efficacy becomes stronger over the season.

Follow-up Analyses

Follow-up analyses were conducted to determine if the relationships between the variables of interest (perceived coaching behaviors and perceived team cohesion and collective efficacy) vary as a function of the athletes' gender and sport type (individual and team). Although the issues pertaining to gender and sport type as factors affecting the relationship between coaches' behavior and group dynamics were not identified as major

purposes of the current study, it was decided to examine these issues in follow-up analyses. The follow-up gender analyses, in particular, were considered as necessary due to the significant time by gender interaction effect reported earlier in this chapter. Specifically, as earlier noted, the results from the Gender by Time interaction analyses indicated that male athletes showed a greater decrease over the season than did their female peers in all aspects of perceived team cohesion. Thus, follow-up analyses were conducted to determine whether the changes in male and female athletes' perceptions of their team's cohesion and collective efficacy were differentially related to their coaches' behavior. These results, as well as these corresponding to sport type (individual versus team) are reported in the next section. Given, however, the relatively small and disparate cell sizes for gender (males = 56 and females = 125) and for individual (n=49) and team (n=128) groups, the results of these analyses should be considered preliminary only. Gender, Team Dynamics, and Coaching Behaviors

The first follow-up analyses were conducted to determine whether the relationship between coaches' behavior and team dynamics differed for male and female athletes. To examine this issue, two separate multivariate multiple regression analyses were conducted; one for male athletes only and one for female athletes. For both analyses, the dependent variables were the change scores for the GEQ and the CEQ, and the independent variables were the LSS and CFQ subscale scores. The results of this analysis for female athletes indicated that the overall multivariate effect just missed significance, Wilks' Lambda = .46, F(72, 646) = 1.24, p<.096. Using a p<.05 level of significance, this result indicates that the relationship between perceived coaching behaviors and changes in female athletes' perceptions of their team's cohesion and collective efficacy was not significant. For the male athletes, however, the overall multivariate effect was significant, Wilks' Lambda = .07, F(72, 238) = 1.80, p < .001. Examination of the univariate F-values indicated that all of the GEQ and CEQ subscale scores were significantly related to the set of coaching behaviors. Furthermore, examination of the canonical results indicate one significant canonical variate. The loadings (presented in Table 12) reveal that all of the coaching behaviors were significantly related to all of the CEQ subscales and two of the GEQ subscales. Interpretation of the sign of the loadings indicates that a democratic leadership style, along with high frequencies of training and instruction behavior, social support, and positive and informational feedback were positively related to increases over the season in male athletes' perceptions of collective efficacy and task cohesion. In contrast, high scores on an autocratic leadership style combined with high frequencies of punishment-oriented and non-reinforcement or ignoring behaviors were negatively related to increases in male athletes' perceptions of collective efficacy and task cohesion over the season. The redundancy index of 42.73 indicates that almost 43% of the variability in the changes that occurred over the season in male athletes' perceptions of team cohesion and collective efficacy could be explained by their perceptions of their coaches' behavior.

Sport Type, Team Dynamics, and Coaching Behaviors

Similar sub-group analyses were conducted to determine whether the relationship between coaching behaviors and changes in athletes' perceptions of team cohesion and collective efficacy would vary as a function of sport type (individual and team). Again, the relatively small and disparate cell sizes for these two sub-groups (individual=50 and team=131) limits the power of the two analyses. Thus, these were considered secondary or preliminary assessments of the effects of sport type.

The results of the multivariate multiple regression analysis for the team sport athletes showed a significant relationship between perceived coaching behaviors and changes in the GEQ and CEQ subscale scores, Wilks' Lambda = .41, F(72, 682) = 1.52, p<.005. Examination of the univariate F-values and the canonical loadings showed the same relationship between the two sets of variables as that found for the overall sample (see Table 10). That is, the coaching behaviors characterized by a democratic leadership style and high frequencies of training and instructional behavior, social support, and a positive and informationally-based feedback style were positively and significantly related to increases over the season in team athletes' perceptions of their group's cohesion and collective efficacy. In contrast, the results of the multivariate multiple regression analysis for the individual sport athletes revealed a non-significant overall effect, Wilks' Lambda -.14, F(72, 702) = 1.09, p<.32. However, given the small sample size for this analysis (n=50), the statistical power for this procedure was low. Thus, these results should be considered with caution. Nevertheless, the different results found in this study for the team sport athletes and the individual sport athletes suggests further research in this area is needed.

CHAPTER FIVE

DISCUSSION

The purpose of the present study was to examine the relationships between coaching behavior, collective efficacy, and team cohesion. Specifically, this study used a longitudinal design to test whether athletes' perceptions of their coaches' leadership style and feedback patterns could explain or predict changes in athletes' perceptions of team cohesion and collective efficacy over the course of a season. Additionally, the relationships between perceived coaching behaviors and team dynamics were examined to determine if such relationships varied as a function of gender and sport type. Finally, the strength and direction of the relationship between athletes' perceptions of team cohesion and collective efficacy were examined as a function of time. The hypothesized relationships were examined through the use of a series of multivariate multiple regression analyses. The results of these analyses are discussed in the following paragraphs.

Coaching Behaviors and Team Dynamics

Based upon research previously conducted on coaching behaviors and, specifically their effect on team cohesion, it was hypothesized that there would be a significant and predictive relationship between athletes' perceptions of their coaches' leadership and behavioral styles and the changes that would occur over the season in athletes' perceptions of their team's cohesion and efficacy. Specifically, it was hypothesized that athletes who perceived their coaches to be high in a democratic leadership style and to provide high frequencies of training and instructional behavior, positive feedback and social support would also perceive their team to be high in task cohesion. Conversely, it was hypothesized that athletes who perceive their coaches to be high in an autocratic leadership style would perceive their team to be low in both task and social cohesion. The multivariate multiple regression analyses with follow-up canonical correlation analyses conducted to test this hypothesis indicated significant support for this relationship.

The multivariate analyses conducted to investigate this relationship found that athletes' perception of their coach's behavior and feedback patterns significantly predicted changes over the season in athletes' perceptions of team cohesion and collective efficacy. These results indicated that 52% of the variability in athletes' changing perceptions of their

teams' dynamics over the season was explained by how they perceive their coach's behavior and feedback patterns. Specifically, the stated hypotheses were directly supported in that increases in athletes' perceptions of team cohesion and collective efficacy over the season were positively correlated with perceptions of their coach exhibiting higher levels of democratic behavior, training and instruction, social support, positive feedback (LSS), and positive and informational feedback (CFQ). Additionally, increases in these perceptions over the season were negatively correlated with autocratic behaviors, punishment-oriented feedback, and non-reinforcement/ignoring mistakes.

These results examining the relationship between coaching behaviors and team dynamics are somewhat consistent with previous research in that athletes' perceptions of their coach's behavior have been related to individual attributes and team cohesion. Specifically, these results support previous studies that also found a predictive relationship between such coaching behaviors as democratic behavior, training and instruction, social support, and positive feedback and higher levels of perceived team cohesion (Gardner et al., 1996; Westre & Weiss, 1991). Furthermore, the results of this study provide additional support for Horn's Working Model of Coaching Effectiveness (2002) and Carron's Model of Cohesion in Sport Groups (Carron & Hausenblaus, 1998). The model of coaching effectiveness is supported because it reveals how coaching behaviors do not necessarily directly influence athlete's performance and behavior. This study examined the athletes' perceptions and beliefs about their team's ability and unity. The results provide strong support for the indirect effect that coaches have upon their players; through their thoughts and perceptions and ultimately, their performance or behavior. Additional support is also provided for the model of cohesion in sport groups because it reveals that leadership factors (specifically the head coach) have a very significant impact upon the cohesiveness of a team.

The results provide interesting information regarding the impact a coach has on the climate of a team. As the results revealed, athletes who perceived their coaches to exhibit higher frequencies of democratic behavior, training and instruction, positive feedback, social support, and positive and informational feedback showed an increase in their perceptions of team cohesion and collective efficacy over the season. Literature on motivational climate would suggest that these coaching behaviors create a team climate

that emphasizes skill acquisition, reinforcement/encouragement and mastery-oriented goals. These aspects foster a task-involving climate which stems from the view that each team member is a valuable contributor and effort and improvement are most emphasized by the coach. The belief that each member is valuable to the team's goals would thus promote beliefs in team cohesion and collective efficacy (McArdle & Duda, 2002).

On the other hand, athletes who perceived their coaches to be higher in autocratic behavior and to provide high frequencies of punishment-oriented feedback and nonreinforcement/ignoring mistakes exhibited a decrease in their perceptions of team cohesion and collective efficacy over the season. Since these behaviors tend to have a negative impact on team dynamics it would suggest that these coaching behaviors may create a team climate which is hostile or ego-oriented. An environment such as this would be focused mainly on winning games and performing for the coach's approval. Since positive reinforcement or encouragement is not prevalent in this environment, the athletes' focus may shift away from becoming better at his/her sport to just avoiding punishment for making mistakes. Additionally, this would not encourage team unity or beliefs because the focus is not on the team itself but on the individual athlete's mistakes or lack of skill. Athletes may not come together as a group and intra-team rivalry may exist because mistakes are often punished (which may embarrass an athlete in front of his/her teammates) and only the better players are rewarded and encouraged. Thus, it is expected that behaviors such as an autocratic coaching style, punishment-oriented feedback and nonreinforcement/ignoring mistakes would not enhance team cohesion and collective efficacy because the focus is not on improving as a group towards a common goal (McArdle & Duda, 2002).

These results are also consistent with those of Turman's, which examined the effect of coaching behaviors on team cohesion (2003). In this qualitative design, interviews were conducted with Division I college football players in order to identify different coaching behaviors, techniques, and strategies that the athletes felt affected their team's cohesion. This study found that the two main coaching techniques that deter team cohesion were categorized into issues of inequity and the use of ridicule or embarrassment. Inequity is mainly described as showing favoritism towards specific athletes while ridicule is characterized by punishment-oriented behavior (e.g., yelling at and/or punishing athletes for mistakes). These behaviors were described by the athletes as having a negative impact on their team's cohesion because the coaching behaviors create a hostile climate among the team and athletes tended to distance themselves from each other. These results are consistent with the current study because they both suggest that punishment-oriented coaching behaviors can negatively affect the relationship between individual athletes and the overall team climate.

Although the results found in this study are very consistent with those found in previous research studies (e.g., Gardner et al., 1996; Westre & Weiss, 1991), the current study does add some significant information to the knowledge base. First, the longitudinal research design used in this study is relatively unique to the literature on both coaching effectiveness and group dynamics. Thus, although previous researchers have demonstrated a significant relationship between coaching behaviors and team dynamics, that relationship was examined using a cross-sectional approach. In this study, the significant relationship between coaches' behavior and athletes' perceptions of their team's cohesion and efficacy was assessed by looking at the *changes* that occurred in athletes' perceptions of their team climate over the season. The fact that a relatively larger proportion of the variability between athletes (52%) in the changes that occurred over the season in their perceptions of their team cohesion and collective efficacy was explained by their perceptions of their coaches' behavior provides a unique perspective to the literature on this topic. Therefore, additional information was obtained regarding how certain coaching behaviors can enhance or decrease a team's dynamics during a season.

Secondly, this study also adds to the literature on collective efficacy. As stated in Chapter Two of this paper, two antecedents of collective efficacy are hypothesized to be leadership behaviors and group cohesion (Zaccaro et al., 1995). The results of this study provide very strong support for the impact of coaching behaviors on collective efficacy. As Kozub and McDonnell (2000) suggested in their study, team cohesion is only one correlate of collective efficacy, and the coach may have a considerable influence over the development of collective efficacy. This research builds upon studies such as this because it examines another correlate of collective efficacy and provides additional support for the many variables that may influence this construct. The relationship between team cohesion and collective efficacy is further discussed in the following section.

Team Cohesion and Collective Efficacy

The second main analyses in this study were conducted to examine the direction and strength of the relationship between collective efficacy and team cohesion. In particular, this study sought to expand upon Spink (1990) and Kozub and McDonnell's (2000) research in two ways. First, this study used a diverse group of sports for the data collection as opposed to analyzing just one specific sport. Secondly, it examined the relationship between collective efficacy and team cohesion over the course of a season as opposed to the traditional 'snapshot' approach. The previous studies conducted to examine the relationship between these two aspects of group dynamics found significant correlations between the two variables, with task measures of cohesion being better predictors of collective efficacy. In this study, no formal hypotheses were forwarded that specifically addressed the changing nature of the relationship between these two variables over a competitive season because of the lack of research that has been done in this area. However, it was expected that the relationship between team cohesion and collective efficacy would be significant and that the strength of the relationship would be greater at the end of the season than at the beginning of the season. That is, athletes who perceived their teams to be high in cohesion were also expected to perceive higher levels of collective efficacy, and athletes who perceived their teams to be low in cohesion were also expected to perceive lower levels of collective efficacy. Additionally, it was tentatively hypothesized that the relationship between the two variables would be stronger at the end of a season, in that athletes' perceptions of their team's cohesion and efficacy would be more strongly related at the end of their season as opposed to the beginning of a new season.

The results from this study very much supported the hypothesis regarding the strength of the relationship between the variables. Specifically, the results show that although the relationship between team cohesion and collective efficacy is quite strong at the beginning of the season, it was even stronger at the end of the season. Just by examining the redundancy index scores, at early season measurement, 51.24% of the variance in team cohesion is explained by measures of collective efficacy. At the late season measurement, it reveals that 81.47% of the variance in team cohesion is explained

by measures of collective efficacy. Thus, although the relationship is very significant at the beginning of the season, it seems to be even more pronounced at the end of the season.

In addition, the study results specifically show that task measures of cohesion significantly predicted higher measures of all collective efficacy subscales and that social measures of cohesion significantly predicted the unity and ability measures of collective efficacy. These results reveal that the relationship does significantly change over time and that changes in one variable significantly predict changes in the other. Specifically, the results show that changes in task measures of team cohesion are highly correlated (positively) with changes in all aspects (subscale measures) of collective efficacy. Changes in GI-S measures also significantly predicted changes in collective efficacy, but the correlation was not as high as the task measures. Athletes' perceptions of the team's task measures of cohesion (GI-T and ATG-S) were the strongest predictors of all measures of collective efficacy. While Group Integration-Task (GI-T) reflects the degree to which the group is oriented to work together toward common goals/objectives and Attraction to Group-Task (ATG-T) reflects individual team member's feeling about his/her personal involvement with the task, productivity, and goals of the group, both prove to be significant predictors of how athletes' perceive their team's efficacy (Carron et al., 1985). These elements of team cohesion seem to have the most direct application to collective efficacy due to their focus on achieving goals as a group. Thus, it would be expected that the more athletes perceive their team to be working together to achieve specific goals, the more confident they would be in their team's capability to collaborate and successfully achieve the desired goals using teamwork and coordinative efforts. Additionally, the ATG-T subscale also measures athletes' perceptions regarding the opportunities provided by their team for skill development and the style of play employed by the team (Carron et Skill development for athletes relates to improving their skills, thus al., 1985). experiencing successful mastery experiences. Improving upon prior performances and experiencing a style of play that is conducive to an athlete's ability or desire would foster an individual athlete's efficacy beliefs and thus their team's efficacy beliefs (Bandura, 1997). Ultimately this study builds upon the previous studies because it examined the changing nature of the relationship, the strength of the relationship over time, and examined the relationship among a diverse group of sports.

Gender and Sport Type Comparisons

As mentioned in Chapter Four of this paper, follow-up analyses were conducted to determine if the relationship between perceived coaching behaviors and changes over the season in athletes' perceptions of their team's dynamics would vary as a function of gender and sport type. The results of these follow-up analyses did show significant differences between the comparison groups. First, in regard to gender, the results indicated that male athletes' perceptions of their team's cohesion and collective efficacy were more affected by their coaches' behavior than were that of the females. Specifically, when the multivariate regression procedures were conducted using only male participants (n=55) all coaching behaviors were significant predictors of the changes that occurred over the season in athletes' perceptions of team cohesion and collective efficacy. This multivariate relationship was significant at the p<.001 significance level. Although the results from the same analysis using only female participants (n=122) found similar results, it did not reach the p<.05 level of significance (p<.096). These disparate results indicate that coaching behaviors generally have the same effect on male and female athletes but the effect is much greater for male participants. Furthermore, the redundancy index of 43% indicates that a very large amount of the variability between male athletes in the changes that occurred over the season in their perception of their team cohesion and collective efficacy was explained by their coaches' behavior.

One possible explanation for these gender differential findings may be found in the athletic identity research literature. Recent research (e.g., Good, Brewer, Petitpas, VanRaalte, & Mahar, 1993; Murphy, Petitpas, & Brewer, 1996) has shown that the physical and psychological demands of participation in intercollegiate athletics and the commitment and exclusive dedication that are required of elite athletes may cause such individuals to get channeled into a restricted identity development. Specifically, the late adolescent years are important in terms of developing a personal identity (Marcia, Waterman, Matteson, Archer, & Orlofsky, 1993). During these years, it is important for individuals to actively explore different roles and behaviors and different ideological, as well as career, options in order for them to develop a personal identity that is most consistent with their individual values, needs, intents, and skills. Individuals who make commitments to roles without getting the opportunity to engage in exploratory behavior

are said to be in a state of identity foreclosure (Marcia et al, 1993). Recent research by Murphy et al. (1996) and Good et al. (1993) has indicated that male Division I intercollegiate athletes may be particularly at risk for developing identity foreclosure and also for restricted career development. If this is indeed the case that male intercollegiate athletes may be more apt to identify so highly with their athletic role (i.e., to be in a state of identity foreclosure), then it would also make sense that they would be more vulnerable to their coaches' feedback and evaluation. That is, if male athletes solely rely upon being identified as athletes, criticisms and support from their coach may be perceived by them to be the strongest measure of their worth, thus having a greater impact on their perceptions. Females, on the other hand, may not be as affected by their coaches' comments and may seek to find support regarding their teams' dynamics from other sources, such as captains, trainers, friends outside of the sport context, or family members. Thus, using the athletic identity literature as one explanation for the gender differences found in this study, it would be hypothesized that male athletes are more susceptible to their coaches' behavior than are female athletes because male athletes have a stronger athletic identity (i.e., are more apt to be in an identity foreclosure state) and thus not have as many other sources of evaluation or support as do female athletes.

A second explanation for the gender differences found in this study may be due to the different sports included. Specifically, all of the male athletes were from either hockey or swimming and diving teams while the female athletes were from a wider variety of sports (e.g., basketball, soccer, volleyball, gymnastics, skating, swimming and diving). Thus, it is possible that the greater susceptibility of the male athletes to their coaches' behavior was due to the type of sport rather than to gender. Mitigating arguments against this possibility are that the two male sport teams included both a team and individual sport. Also, one sport (hockey) is typically perceived to be a revenue-producing sport while swimming and diving teams are not. Finally, despite the small sample size of the male athletes (n=56), there was a considerable amount of inter-individual variability in all of their subscale scores (i.e., measures of coaches' behavior as well as team cohesion and collective efficacy). Thus, although these males were only from two sports, they appeared to show as much variability in their responses as did the female athletes (n=125) who were from a number of different sports. In summary, whatever the reasons for the gender differences found in this study, it does appear as if male athletes are more susceptible or vulnerable to their coaches' behavior than are female athletes. This was an unexpected finding and clearly further research is necessary to clarify how and why male and female athletes differ in their reaction to their coaches' behavior.

A second set of follow-up analyses were conducted to test for differences as a function of sport type. The results revealed significant differences for individual and team sport athletes. Specifically the results found a significant relationship between athletes' perceptions of their coaches' behaviors and their changes in perceptions of team cohesion and efficacy for team sport athletes but not for individual sport athletes (i.e., swimming/diving and gymnastics). Thus athletes' perceptions of their coaches' behavior had a significant affect upon their perceptions of team dynamics over a season depending on the type of sport they play. The results from these follow-up analyses provide interesting information regarding the relationship between coaching behaviors and team dynamics. It is interesting that the coaching style and feedback patterns did not appear to have a significant impact on athlete's perceptions of their team's unity and ability when they compete in a sport that is more individual in nature. Although this may seem obvious because of the idea that collective efficacy is probably more essential in sports that require interaction and interdependence between athletes, it is also important to note that although swimming/diving and gymnastics are considered individual sports because the tasks are performed solo by the individual athlete they still have team aspects to their formation. For both sports, the team's overall placement at a competition/meet is decided upon by a summation of individual scores, thus each athlete's scores count towards the team's points. One may think that although each athlete competes alone that there is still a sense of team due to this scoring method. Nevertheless, the results from this study reveal that the athletes' perceptions of their coaches' leadership style and behaviors are not related to the changes that occurred over the season in perceived team cohesion and collective efficacy for athletes from individual sport teams. Such differences between team and individual sport athletes is consistent with other research in the coaching effectiveness literature which has shown differences between individual and team sport athletes in the types of behaviors they prefer their coaches to exhibit (see reviews of this literature by Chelladurai, 1990 and Horn, 2002).

<u>Summary</u>

In examining all of the analyses conducted in the present study, a number of conclusions can be made. First, the results from the study strongly support and expand upon previous research conducted in these areas. It was found that coaching behaviors have a significant impact upon team dynamics over the course of season. Furthermore, the relationship between the team dynamics of cohesion and efficacy were found to be dynamic in nature and strongest as the end of the season.

Secondly, this research builds upon previous studies because of its longitudinal nature. By examining the relationships between the variables at two points of measurement, the changing nature of the variables can be examined and more conclusions can be drawn. This study reveals that certain coaching behaviors can in fact, predict changes in athletes' perceptions of team dynamics over a season.

Finally, this study adds to the coaching behavior literature because it highlights the effect of coaching behaviors on the team's group dynamics. As previous studies have found, athletes' perceptions, beliefs and attitudes toward their coach and/or team play a major role in their success and performance, thus it is vital to understand the coaches' role in that relationship (Horn, 2002). Additionally, this study built upon the current literature in team dynamics by examining collective efficacy in addition to team cohesion. Although the relationship between the two variables has been examined in previous research, this study examined the relationships between coaching behavior, group cohesion, and collective efficacy over time.

In summary, the results from this study provide additional support for coaching behaviors and feedback patterns as factors which influence athletes' perceptions of team cohesion. Additionally, this research expanded upon previous research to include collective efficacy as another possible team dynamic that is influenced by coaching behaviors. The findings from this study indicate certain aspects of coaching behavior that were related to athletes' perceptions of team dynamics, as well as the changes that occur in these perceptions over the course of a season. These results then provide support for the
notion that coaches play a significant role in the psycho-social development of athletes, as well as within team environments.

Limitations

Although these results provide a considerable amount of information regarding the relationships between perceived coaching behaviors and team dynamics, a number of limitations should be noted. First, the study only consisted of Division I college athletes. It is a possibility that different results would be found if athletes from different age groups (i.e., youth, high school, Division III) and/or competitive levels were surveyed. The research supports previous studies conducted on collegiate athletes but it did not include high school or recreational level participants that other studies have included (Spink, 1990; Westre & Weiss, 1991; Gardner et al., 1996). Therefore, in interpreting these results, it is important to remember that they are limited to this specific subject sample.

Secondly, a methodological limitation of the study involves the use of the LSS as a measurement of coaching behaviors. Although the LSS is widely used within coaching behavior literature, it has some restrictions. As mentioned in Chapter Three, the autocratic behavior subscale has consistently been found to be low in internal consistency. Additionally, in Chelladurai and Riemer's (1998) examination of the LSS it was suggested that both quantitative and non-quantitative procedures be used to identify a more comprehensive list of leader behavior dimensions and to develop more appropriate items to assess these leadership dimensions. At this point, the LSS is the most widely used and tested questionnaire to assess leadership behaviors. With the three questions that were added to enhance the autocratic subscale, the alpha coefficients in this study indicated that the autocratic subscale reached an acceptable level of internal consistency (alpha=.81). However, as a number of other writers and researchers have indicated (e.g., Chelladurai, 1993; Chelladurai & Reimer, 1998; Horn, 2002), additional work needs to be completed in order to develop measures of coaching behaviors that are more accurate, sensitive, and contextually valid in field settings.

Another methodological limitation of the study involves the use of the CEQ to assess collective efficacy. Since only a few studies have examined collective efficacy in sport, the instruments used to measure the construct have varied drastically. The questionnaires concerning the concept have ranged from single-item questions (i.e., "How confident are you that your team will attain this placing?") (Spink, 1990) to sport-specific questionnaires examining specific tasks (i.e., outskate, outcheck, stick handle better, etc.) (Feltz & Lirgg, 1997). Although each study used different instruments to measure the construct, each study reported high measures of internal consistency (Feltz & Lirgg, 1997; Chase, Lirgg, & Feltz, 1996; Spink, 1990; Paskevich et al., 1995). Since a goal of this study was to examine the relationship between collective efficacy, team cohesion, and coaching behaviors across a variety of sports, it would have been difficult to use a sport-specific questionnaire. Thus, this study followed the suggestions of Gist (1987) and measured collective efficacy by using individuals' own perceptions of their team's collective efficacy and used a general sport questionnaire to assess this relationship across many sports. Although the internal consistency measures as calculated by Cronbach's alpha indicated high levels of consistency, the measures of collective efficacy in this study should be considered with caution due to the lack of published research using this particular questionnaire.

Another limitation to this study is that the coaching behavior data is solely based on athletes' perceptions of these variables, as opposed to the actual behaviors. Although a major aspect to this study was to determine the individual athletes' perceptions of their team's dynamics, their perceptions of their coaches' behaviors may not be completely accurate. Due to the influence that a coach has upon an individual athlete (as described in Chapter Two), athletes' perceptions of their leader may be influenced by a plethora of factors. Thus, this study examined what the individual athlete thought of their coach and not necessarily the actual behaviors and feedback patterns that the coaches exhibit. Future studies could seek to examine the coach's behavior directly through the use of the Coaching Behavior Assessment System and then compare the actual behaviors to the athletes' perceptions of team dynamics (Smith, Smoll, & Hunt, 1977)

Finally, it would seem appropriate to conduct this study using a qualitative research design. Although the results from the present study suggest that coaching behaviors have a significant impact upon athletes' perceptions of team dynamics, there are certainly other factors which may also impact these perceptions (e.g., peer leaders, quality of the team, success of the team, etc.). A quantitative approach to this study examines the variables that are set forth from the hypotheses. A qualitative design would allow for the researcher to

uncover additional variables that the athletes may believe are most vital to the success of their team. Therefore, future studies should try to reveal the factors that are most important to the athletes' belief in the ability and unity of their team.

Overall, this study contributes to the literature on coaching behaviors and team dynamics. The study sought to replicate previous studies and expand upon the current knowledge regarding the strength of the relationships between these variables. In addition, there are many practical implications for coaches that can be drawn from these results. First, the results reveal that different types of feedback and styles of behavior can affect a team's dynamics. Specifically, a democratic coaching style that encourages and values the athletes' ideas is strongly correlated with high perceptions of team dynamics. Additionally, leadership that includes positive and informational feedback, training and instruction, and social support also aids in the enhancement of athletes' perceptions of team cohesion and efficacy. Secondly, many coaches believe that they need to engage in 'team building activities' and hold social events for their athletes to come together. Although these activities may be helpful in some ways, this study reveals that coaches' behaviors alone can significantly aid in this process. Furthermore, since task measures of cohesion seem to be the most affected by coaches' behaviors and the most predictive of efficacious beliefs, it may prove to be more beneficial to address team goal mapping or planning to unify a sport team. Finally, this study provides valuable information for coaches because it shows how significant their impact can be upon their team. Results from this study should be included in coaching education workshops so that data is provided to show how critical a coach's style and feedback can be to a team and what characteristics are most beneficial to enhancing a sense of team efficacy and unity.

REFERENCES

- Allen, J.B., & Howe, B.L. (1998). Player ability, coach feedback, and female adolescent athletes' perceived competence and satisfaction. *Journal of Sport & Exercise Psychology*, 20, 280-299.
- Amorose, A.J., & Horn, T.S. (2000). Intrinsic motivation: Relationships with collegiate athletes' gender, scholarship status, and perceptions of their coaches' behavior. *Journal of Sport & Exercise Psychology*, 22, 63-84.
- Amorose, A.J., & Horn, T.S. (2001). Pre- to post-season changes in the intrinsic motivation of first year college athletes: Relationship with coaching behavior and scholarship status. *Journal of Applied Sport Psychology*, 13, 355-373.
- Anshel, M.H. (2003). Sport Psychology: From Theory to Practice (4th edition). San Francisco, CA: Benjamin Cummings.
- Bales, R.F., Strodtbeck, F.L., Mills, T., & Roseborough, M.E. (1951). Channels of communication in small groups. *American Social Review*, 16, 461-468.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory.Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1977). Self efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84,191-215.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Bass, B.M. (1985). *Leadership and performance beyond expectations*. New York: Free Press.

- Black, S.J., & Weiss, M.R. (1992). The relationship among perceived coaching behaviors, perceptions of ability, and motivation in competitive age-group swimmers. *Journal* of Sport & Exercise Psychology, 14, 309-325.
- Carron, A.V. (1982). Cohesion in sports: Interpretations and considerations. *Journal of Sport Psychology, 4,* 123-138.
- Carron, A., Brawley, L., & Widmeyer, W. (1998). The measurement of cohesiveness in sport groups. In J.L. Duda (Ed.), Advancements in sport and exercise psychology measurement. Morgantown, WV: Fitness Information Technology.
- Carron, A.V., Colman, M.M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A meta analysis. *Journal of Sport & Exercise Psychology*, 24, 168-188.
- Carron, A., Widmeyer, W., & Brawley, L. (1985). The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology*, 7,244-266.
- Carron, A., & Hausenblas, H. (1998). *Group dynamics in sport* (2nd edition). Morgantown, WV: Fitness Information Technology.
- Chelladurai, P. (1990). Leadership in sports: A review of relevant research. International Journal of Sport Psychology, 21, 328-354.
- Chelladurai, P. (1993) Styles of decision making in coaching. In J.M. Williams (Ed.),
 Applied sport psychology: Personal growth to peak performance (pp. 99-109).
 Mountain View, CA: Mayfield.

- Chelladurai, P., & Carron, A. (1978). Leadership. Canadian Association for Health, Physical Education, and Recreation Sociology of Sport Monograph Series A.
 Calgary, AB: University of Calgary.
- Chelladurai, P., & Reimer, H. (1998). Measurement of leadership in sport. In J.L. Duda (Ed.), Advancements in sport and exercise psychology measurement (pg. 227-253).
 Morgantown, WV: Fitness Information Technology.
- Chelladurai, P. & Saleh, S. (1978). Preferred leadership in sports. *Canadian Journal of Applied Sport Sciences, 3*, 85-92.
- Chelladurai, P. & Saleh, S. (1980). Dimensions of leadership behavior in sport: Development of a leadership scale. *Journal of Sport Psychology*, *2*, 34-45.
- Dwyer, J.J.M., & Fischer, D.G. (1990). Wrestlers' perceptions of coaches' leadership as predictors of satisfaction with leadership. *Perceptual Motor Skills*, *71*, 511-517.
- Feltz, D. (Nov, 2003). Personal communication regarding collective efficacy measurement.
- Feltz, D. & Lirgg, C. (1998). Perceived team and player efficacy in hockey. *Journal of Applied Psychology*, 83, 557-564.
- Feltz, D.L. & Lirgg, C.D. (2001). Self-efficacy beliefs of athletes, teams, and coaches. In R.N. Singer, H.A. Hausenblas, & C.M. Janelle (2nd ed) (pp 340-361). *Handbook of sport psychology*. NY: John Wiley & Sons.
- Feltz, D.L., Chase, M.A., Moritz, S.E., Sullivan, P.J. (1999). A conceptual model of coaching efficacy: Preliminary investigation and instrument development. *Journal* of Educational Psychology, 91, 765-776.

- Festinger, L., Schachter, D., & Back, K. (1950 Social pressures in informal groups. Stanford, CA: Stanford University Press. (Originally published in 1950).
- Gardner, D., Shields, D., Bredemeier, B., & Bostrom, A. (1996). The relationship between perceived coaching behaviors and team cohesion among baseball and softball players. *The Sport Psychologist, 10,* 367-381.
- Gibb, C.A. (1951). An experimental approach to the study of leadership. *Occupational Psychology*, *25*, 233-248.
- Gist, M.E. (1987). Self-efficacy: Implications for organizational behavior and human resource management. *Academy of Management Review*, 17, 183-211.
- Good, A.J., Brewer, B.W., Petitpas, A.J., VanRaalte, J.L., & Mahar, M.T. (1993, Spring).
 Identity foreclosure, athletic identity, and college sport participation. *The Academic Athletic Journal*, 1-12.
- Gross, N., & Martin, W. (1953). On group cohesiveness. *American Journal of Sociology*, 52, 533-546.
- Harter, S. (1985). *Manual for the Self-Perceptions Profile for Children*. Denver: University of Denver.
- Horn, T.S. (2002). Coaching effectiveness in the sport domain. In T.S. Horn (Ed.), *Advances in Sport Psychology* (pg. 309-355). Champaign, IL: Human Kinetics.
- Horn, T.S., & Glenn, S.D. (1988, June). The relationship between athletes' psychological characteristics and their preference for particular coaching behaviors. Paper presented at the meeting of the North American Society for the Psychology of Sport and Physical Activity, Knoxville, TN.

- Indik, B.P. (1965). Organization size and member participation: Some empirical tests of alternative explanations. *Human Relations, 18,* 339-350.
- Jones, E.E., & Berglas, S. (1978). Control of attributions about the self through selfhandicapping strategies: The appeal of alcohol and the role of underachievement. *Personality and Social Psychology Bulletin, 4,* 200-206.
- Kozub, S., & McDonnell, J. (2000). Exploring the relationship between cohesion and collective efficacy in rugby teams. *Journal of Sport Behavior, 23,* 120-129.
- Latane, B., Williams, K., & Harkins, S. (1979). Many hands make light the work: The causes and consequences of social loafing. *Journal of Personality and Social Psychology*, 37, 822-832.
- Marcia, J.E., Waterman, A.S., Matteson, D.R., Archer, S.L, & Orlofsky, J.L. (1993). *Ego identity: A handbook for psychosocial research*. New York: Springer-Verlag.
- McArdle, A., & Duda, J.K. (2002). Implications of the motivational climate in youth sports. In F.L. Smoll & R.E. Smith (Eds.), *Children and Youth in Sport (2nd edition)* (pg. 409-434). Dubuque, IA: Kendall/Hunt Publishing Company.
- McAuley, E., & Blissmer (2002). Self-efficacy and attributional processes in physical activity. In T.S. Horn (Ed.), *Advances in Sport Psychology* (pp. 185-201). Champaign, IL: Human Kinetics.
- McAuley, E., Duncan, T., & Tammen, V.V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise & Sport, 60,* 48-58.

- McMillin, C.J. (1990). The relationship of athlete self-perceptions and athlete perceptions of leader behaviors to athlete satisfaction. Unpublished doctoral dissertation, University of Virginia-Charlottesville.
- Mikalachki, A. (1969). *Group cohesion reconsidered*. London: School of Business Administration, University of Western Ontario.
- Melnick, M., & Chemers, M. (1974). Effects of group social structure on the success of basketball teams. *Research Quarterly*, 45, 1-8.
- Murphy, G.M., Petitpas, A.J., & Brewer, B.W. (1996). Identity foreclosure, athletic identity, and career maturity in intercollegiate athletes. *The Sport Psychologist*, 10, 239-246.
- Nunnally, J. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.
- Pedhazur, E.J. (1982). *Multiple regression in behavioral research: Explanation and prediction*. New York: Holt, Rinehart, & Winston.
- Paskevich, D.M (1995). Conceptual and measurement factors of collective efficacy in its relationship to cohesion and performance outcome. Unpublished doctoral dissertation, University of Waterloo, Waterloo, ON.
- Paskevich, D.M., Brawley, L.R., Dorsch, K.D., & Widmeyer, W.N. (1999). Relationship between collective efficacy and team cohesion: Conceptual and measurement issues. *Group Dynamics: Theory, Research, and Practice, 3*, 210-222.
- Shaw, M.E. (1981). *Group dynamics: The psychology of small group behavior* (3rd ed.) New York: McGraw-Hill.

- Smith, F.S. (1976). The Index of Organizational Reactions (IOR). JSAS Catalog of Selected Documents in Psychology, 6, Ms. No, 1265.
- Smith, R.E., Smoll, F.L., & Curtis, B (1978). Coaching behaviors in Little League baseball. In F.L. Smoll & R.E. Smith (Eds.), *Children and youth in sport* (pp. 125-141). Chicago: Brown & Benchmark.
- Smith, R.E., Smoll, F.L., & Curtis, B (1979). Coaching effectiveness training: A cognitive-behavioral approach to enhancing relationship skills in youth sport coaches. *Journal of Sport Psychology*, 1, 59-75.
- Smith, R.E., Smoll, F.L., Curtis, B., & Hunt, E. (1978). Towards a mediational model of coach-player relationships. *Research Quarterly for Exercise and Sport, 49*, 528-541.
- Smith, R.E., Smoll, F.L., & Hunt, E. (1977). A system for the behavioral assessment of athletic coaches. *Research Quarterly*, 48, 401-407.
- Spink, K.S. (1990). Group cohesion and collective efficacy in volleyball teams. *Journal* of Sport & Exercise Psychology, 12, 301-311.
- Spink, K.S. (1995). Cohesion and intention to participate of female sport team athletes. *Journal of Sport & Exercise Psychology*, 17, 416-427.
- Spink, K.S., & Carron, A.V. (1992). Group cohesion and adherence in exercise classes. Journal of Sport & Exercise Psychology, 14, 78-86.
- Tabachnick, B.G., & Fidell, L.S. (1996). Using multivariate statistics (3rd ed.). New York: Harper Collins.

- Turman, P.D. (2003). Coaches and cohesion: The impact of coaching techniques on team cohesion in the small group setting. *Journal of Sport Behavior, 26,* 86-103.
- Weiss, M.R., Bredemeier, B.J., & Shewchuck, R.M. (1985). An intrinsic/extrinsic motivation scale for the youth sport setting: A confirmatory factor analysis. *Journal of Sport Psychology*, 7, 75-91.
- Weiss, M.R., & Friedrichs, W.D. (1986). The influence of leader behaviors, coach attributes, and institutional variables on performance and satisfaction of collegiate basketball teams. *Journal of Sport Psychology*, *8*, 332-346.
- Westre, K. & Weiss, M. (1991). The relationship between perceived coaching behaviors and group cohesion in high school football teams. *Sport Psychologist, 5,* 41-54.
- Widmeyer, W., Brawley, L., & Carron, A. (2002). Group dynamics in sport. In T.S. Horn (Ed.), Advances in Sport Psychology (pg. 285-308). Champaign, IL: Human Kinetics.
- Williams, K.D., & Karau, S.J. (1991). Social loafing and social compensation: The effects of expectations of co-worker performance. *Journal of Personality and Social Psychology*, 61, 570-581.
- Yukl, G.A. (1989). Leadership in organizations (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Zaccaro, S.J. (1984). Social loafing: The role of task attractiveness. *Personality and Social Psychology Bulletin, 10,* 99-106.
- Zaccaro, S., Blair, V., Peterson, C., & Zazanis, M. (1995). Collective efficacy. In J. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment* (pg. 305-328). New York: Plenum.

Subscales

Leadership Scale for Sports: Listing of Subscales and Their Content.

Description of Content

Training and Instruction Leadership style characterized by a high emphasis on providing training and technical support to athletes. The coach does this by: (a) conducting hard and strenuous training sessions, (b) instructing athletes in the skills, techniques, and tactics that are necessary for the sport; (c) clarifying the working relationship of the team and the individual roles of the team's members, and (d) structuring and coordinating team members' activities. Autocratic Styles Leadership style which is characterized by the leader's separation from his/her athletes. The coach stresses his/her own personal authority in making decisions for the team and does not involve athletes in the decisionmaking process. **Democratic Style** Leadership style which strongly encourages involvement by the athletes in decisions that pertain to the group, such as goals, practice methods, game tactics, rules, and strategies. Social Support Coaching behaviors characterized by a concern for the welfare of individual athletes as people outside of sport context. Social support includes the establishment of warm interpersonal relationships with the athletes. **Positive Feedback** Leadership behavior that is characterized by high frequencies of praise and reinforcement in response to athletes' performances. Coaches who provide positive feedback have a tendency to recognize and reward positive behaviors by individual athletes.

Coaching Behavior Assessment Scale Feedback Categories

I. Coaches' Reactive Behaviors – feedback given in response to performances exhibited by individual athletes or by a group of athletes.

- A. Following a desirable performance by an individual athlete or a group (e.g. a good shot on net)
 - 1. Reinforcement (R) (e.g., "Great shot, Mike." or "Nice hustle, guys!")
 - 2. Non-Reinforcement (NR) (when coder believes the coach saw a good performance but did not respond to it.)
- B. Following an unsuccessful performance by an individual athlete or a group (e.g., mistake/error)
 - 3. **Ignore Mistake (IM)** (when coder believes the coach saw an error but did not respond to it.)
 - 4. **Mistake-Contingent Encouragement (EM)** (e.g., "That's O.K., Alyse. You'll get it eventually" or "Great try, Ryan. Keep it up.")
 - 5. **Mistake-Contingent Technical or Corrective Instruction (TIM)** (e.g., "You need to keep your head up when you shoot" or "You didn't bend your knees on that shot.")
 - 6. **Punishment (P)** (e.g., "Come on, Molly. That was an awful shot!" or "Danny, what's wrong with you today?"). NOTE: Punishment can also be non-verbal, such as coach throwing clipboards or throwing hands in the air with disgust.
 - 7. Mistake-Contingent Technical or Corrective Instruction combined with Punishment (TIMP) – (e.g., Come on, Molly. You can release the ball quicker than that." or "I'm sick of telling you this over and over, bend your knees and keep your head up.") NOTE: This is usually coded when the coach delivers the corrective instruction with a tone that indicates anger or frustration.

II. Coaches' Spontaneous Behaviors – general coach communication that is *not* provided in response to any particular players(s)' performance or behavior.

- A. Game-related communication
- **8.** General Technical Instruction (TIG) (e.g. "Now on this next drill, I want all of you to really focus on quick feet and bent knees.")
 - **9.** General Encouragement (EG) (e.g. "Keep it up" or "Hustle, hustle, hustle.")
 - **10. Organization (O)** (e.g., "Everyone needs to shag balls now" or "After you've finished the drill, hustle back in line to start again.")
 - **11. Keeping Control (KC)** (e.g., "Girls, you need to hustle in order to keep the drill going")
- B. Game-irrelevant communication
 - 12. General Communication (GC) (e.g., "Did anyone watch television last night?" or "Has anyone seen any good movies lately?")

Coaching Feedback Questionnaire Categories

I. Examples of feedback that the athlete believes would be given after performing a **successful** performance

- A. **Reinforcement (R)** (e.g., when athlete believes their coach to provide feedback such as "Great play, Mike.")
- B. **Reinforcement plus Technical Instruction (RTI)** (e.g., when athlete believes their coach to provide feedback such as "Great play. Now you're keeping your eyes on the ball.")
- C. Non-Reinforcement (NR) (when athlete believes the coach would ignore or not respond to their successful performance.)

II. Examples of feedback that the athlete believes would be given after performing an **unsuccessful** performance

- D. **Ignore Mistake (IM)** (when athlete believes the coach saw his/her error but did not respond to it.)
- E. **Mistake-Contingent Encouragement (EM)** (e.g., "Hang in there! You'll do better next time" or "That's O.K. Keep working at it!")
- F. **Mistake-Contingent Technical or Corrective Instruction (TIM)** (e.g., "You dropped your elbow. Next time keep it up" or "No, that's not right, you need to work on a faster release.")
- G. **Punishment (P)** (e.g., "That play sucked!" or "That was a really stupid play").
- H. Mistake-Contingent Technical or Corrective Instruction combined with **Punishment (TIMP)** (e.g., Your technique looks lousy! Keep your head up" or "How many times have I told you to extend your elbow?")

Group Environment Questionnaire: Specific Constructs Constituting Perceived Cohesiveness in Sport Groups

Construct	Definition & Sample item
Group Integration-Task (GI-T)	Individual team member's feeling about the closeness, bonding, and similarity within the team as a whole around the group's task: Our team is united in trying to reach its goals for performance.
Group Integration-Social (GI-S)	Individual team member's feeling about the similarity, closeness, and bonding within the team as a whole around the group as a social unit: Members of our team do not stick together outside of practices and games.
Interpersonal Attraction to Group-Task (ATG-T)	Individual team member's feeling about his/her personal involvement w/the group, task, productivity, and goals and objectives: I do not like the style of play on this team.
Interpersonal Attraction to Group-Social (ATG-S)	Individual team member's feelings about his/her personal acceptance, and social interaction w/the group: Some of my best friends are on this team.

Breakdown of Participants by Gender and Primary Sport

		Gen	der
Primary Sport		Males	Females
Soccer		0	21
Volleyball		0	13
Hockey		46	0
Field Hockey		0	17
Synchronized Skating	5	0	23
Swim/Diving		10	25
Gymnastics		0	15
Basketball		0	11
	TOTALS	56	125

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Descriptive Statistics for Division I College Coaching Behaviors

		-	
Variable	Mean	Std. Deviation	Range
LSS			
Autocratic	2.85	0.66	1.43 to 4.71
Democratic	3.16	0.71	1.56 to 4.67
Training & Instruction	3.57	0.55	2.31 to 4.92
Social Support	2.98	0.69	1.00 to 5.00
Positive Feedback	3.61	0.75	1.8 to 5.00
CFQ			
Positive and Informational Feedback	3.26	0.72	1.38 to 4.75
Punishment-oriented feedback	2.24	0.95	1.00 to 4.50
Non-Reinforcement/Ignoring Mistakes	2.39	0.92	1.00 to 5.00

Level of Early Season, Late Season, and Change in Collective Efficacy

Variable	Mean	Std. Deviation	Range
	-		0
CEQ Ability Early Season Subscale	7.31	1.31	3.00 to 9.00
CEQ Ability Late Season Subscale	6.53*	1.84	1.25 to 9.00
CEQ Ability CHANGE Score	-0.78	1.47	-5.50 to 3.25
CEQ Unity Early Season Subscale	7.62	1.06	3.00 to 9.00
CEQ Unity Late Season Subscale	6.77*	1.60	1.50 to 9.00
CEQ Unity CHANGE Score	-0.86	1.36	-6.00 to 2.25
CEQ Persistence Early Season Subscale	7.39	1.05	4.00 to 9.00
CEQ Persistence Late Season Subscale	6.74*	1.54	2.50 to 9.00
CEQ Persistence CHANGE Score	-0.65	1.28	-4.75 to 2.75
CEQ Preparation Early Season Subscale	7.63	1.02	3.25 to 9.00
CEQ Preparation Late Season Subscale	6.79*	1.57	2.00 to 9.00
CEQ Preparation CHANGE Score	-0.84	1.33	-5.75 to 1.75
CEQ Effort Early Season Subscale	7.61	0.97	3.50 to 9.00
CEQ Effort Late Season Subscale	6.64*	1.68	1.75 to 9.00
CEQ Effort CHANGE Score	-0.98	1.39	-4.75 to 2.00
Valid N (listwise)	172		

* significant change from early season to late season, p<.01

Level of Early Season, Late Season, and Change in Team Cohesion

Variable	Mean	Std. Deviation	Range
GEQ ATG-T Early Season Subscale	6.61	1.26	1.75 to 8.00
GEQ ATG-T Late Season Subscale	5.84**	1.66	1.75 to 8.00
GEQ ATG-T CHANGE Score	-0.77	1.57	-5.75 to 3.25
GEQ ATG-S Early Season Subscale	6.88	1.22	2.60 to 8.00
GEQ ATG-S Late Season Subscale	6.69*	1.38	1.00 to 8.00
GEQ ATG-S CHANGE Score	-0.19	1.23	-4.20 to 2.80
GEQ GI-T Early Season Subscale	6.50	1.09	2.80 to 8.00
GEQ GI-T Late Season Subscale	6.07**	1.28	1.80 to 8.00
GEQ GI-T CHANGE Score	-0.43	1.25	-5.00 to 3.60
GEQ GI-S Early Season Subscale	6.86	1.21	2.50 to 8.00
GEQ GI-S Late Season Subscale	6.62**	1.33	1.75 to 8.00
GEQ GI-S CHANGE Score	-0.26	1.42	-6.25 to 3.25
Valid N (listwise)	174.00		

 \ast significant change from early season to late season, p<.05

** significant change from early season to late season, p<.01

Cronbach's alpha coefficients for all study subscales

LSS	alpha coef	# of items
Autocratic	0.81	8
Democratic	0.87	9
Training & Instruction	0.87	13
Social Support	0.80	8
Positive Feedback	0.89	5
CFQ	alpha coef	# of items
Positive & Informational Feedback	0.77	8
Punishment-oriented Feedback	0.82	4
Non-reinforcement/Ignoring Mistakes	0.80	4
GEQ	alpha coef	# of items
ATG-T Pre	0.57	4
ATG-T Post	0.74	4
ATG-S Pre	0.63	5
ATG-S Post	0.72	5
GI-T Pre	0.67	5
GI-T Post	0.75	5
GI-S Pre	0.75	4
GI-S Post	0.74	4
CEQ	alpha coef	# of items
Ability Pre	0.94	4
Ability Post	0.94	4
Unity Pre	0.83	4
Unity Post	0.90	4
Persistence Pre	0.83	4
Persistence Post	0.88	4
Preparation Pre	0.83	4
Preparation Post	0.90	4
Effort Pre	0.89	4
Effort Post	0.89	4

Team Dynamics and Perceived Coaching Behavior: Canonical Loadings

Variable	Loadings
Dependent variables	
GEQ: attraction-to-group task	-0.861
GEQ: attraction-to-group social	-0.380
GEQ: group-integration task	-0.689
GEQ: group-integration social	-0.425
CEQ: ability	-0.551
CEQ: unity	-0.704
CEQ: persistence	-0.733
CEQ: preparation	-0.669
CEQ: effort	-0.691
Predictor variables	
LSS: autocratic behavior	0.674
LSS: democratic behavior	-0.596
LSS: training & instruction	-0.679
LSS: social support	-0.404
LSS: positive feedback	-0.579
CFQ: positive-informational feedback	-0.373
CFQ: punishment-oriented feedback	0.721
CFQ: non-reinforcement/ignoring mistakes	0.774
R^{\pm}	= 0.51
	= 0.26

Note: A minimal loading of .30 was considered significant

Seasonal Changes in Team Cohesion and Collective Efficacy Canonical Loadings

Variable	Loadings
Dependent variables	
GEQ: attraction-to-group task	0.858
GEQ: attraction-to-group social	0.292
GEQ: group-integration task	0.799
GEQ: group-integration social	0.428
Predictor variables	
CEQ: ability	0.706
CEQ: unity	0.944
CEQ: persistence	0.842
CEQ: preparation	0.722
CEQ: effort	0.920
	R = 0.565
	$R_{-}= 0.319$

Note: A minimal loading of .30 was considered significant

Team Dynamics and Perceived Coaching Behaviors: Canonical Loadings

Variable		Males (Loadings)
Dependent variables		
GEQ: attraction-to-group task		-0.712
GEQ: attraction-to-group social		-0.202
GEQ: group-integration task		-0.374
GEQ: group-integration social		-0.287
CEQ: ability		-0.766
CEQ: unity		-0.796
CEQ: persistence		-0.709
CEQ: preparation		-0.784
CEQ: effort		-0.859
Predictor variables		
LSS: autocratic behavior		0.470
LSS: democratic behavior		-0.853
LSS: training & instruction		-0.792
LSS: social support		-0.750
LSS: positive feedback		-0.806
CFQ: positive-informational feedback		-0.548
CFQ: punishment-oriented feedback		0.341
CFQ: non-reinforcement/ignoring mistakes		0.740
	R=	0.80
	$R_{-}=$	0.64

Note: A minimal loading of .30 was considered significant

Figure 1

Chelladurai's Multidimensional Model of Leadership for Sports





Working Model of Coaching Effectiveness (Horn, 2002)



Conceptual Model of Cohesion in Sport Groups (Carron & Hausenblaus, 1998)



Appendix A Reseacher's Script

Hello. My name is George Pappas, and this is Lindsay Ronayne. We are graduate students in the PHS Department at Miami University in Oxford, Ohio. We are here today to ask each of you to participate in a research study that we, and Dr. Horn (a professor in the PHS Department) are conducting to find out what you think of yourself as an athlete, why you are motivated to participate in your sport, what you think of your team's cohesiveness, and how confident you are in game and practice situations.

To be a participant in this study, you will need to fill out this survey which consists of a number of questionnaires asking you questions about yourself and your team. Filling out this set of questionnaires should take you about 20 to 30 minutes. We would also like for each of you to complete another set of questionnaires at the end of your regular season. Again, that session would take about 20 to 30 minutes.

You should know that no one besides us and our academic advisor, Dr. Horn, will ever see your answers. We are not even asking you to tell us your name, your school's name, your uniform number, or the position you play. We will ask you to put a code name on this survey and on the one that you will complete at the end of the season. We need to do this so that we can match up your two sets of answers. Each of you will pick your own code name, and no one (other than yourself) will know what code name you have picked. Thus, no one (including ourselves) will be able to identify what answers you, as an individual athlete, provided to our questions. We do hope to write a paper or papers describing the results of this study. These papers would be published in research journals, but your name, your coach's name, and your school's name would never be identified because we are not even collecting this information.

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

We would really appreciate your help with this study as we are trying to find out more about the factors that affect the motivation, stress and confidence of college athletes. We are asking you, as athletes, for this information because we believe that you are in the best position to tell us what causes you to be motivated for sport participation.

Appendix B

Demographic Questionnaire – Collegiate Athletes' Survey

1.	Subjec	et Name	(Pet name/	/Eleme	ntary Sch	ool)				
2.	Gender	- 								
3.	Sport _									
4.	Age									
5.	Year:	Fr	So	_ Jr		Sr_	Fifth	Yr		
6.	Race									
	African American Asian American									
	CaucasianHispanic									
	Native American Mixed									
	Other									
7.	7. What is your current level of enjoyment in your sport?									
	10	9	8	7	6	5	4	3	2	1
	Very I	High			Mod	erate			Very	Low
8.	As an	individu	al, how su	ccessfu	l were yo	ou this sea	son in rea	aching y	our persor	nal goals?
	10	9	8	7	6	5	4	3	2	1
	Very S	Successfi	ıl]	Moderate	ly Succes	sful		Very U	nsuccessful
9.	How	successfi	ul do you t	hink yo	our team v	was seaso	n in reacl	ning tear	n goals?	
	10	9	8	7	6	5	4	3	2	1
	Very S	Successfi	ıl]	Moderate	ly Succes	sful		Very U	nsuccessful
10.	Was th	here a tur Yes _	ming point	t to you No _	r season 1	that helpe	ed aid a ch	nange fo	r better or	worse?
		If yes	, was ıt rel	ated to	your spor	rt or to an	addition	al outsid	le influenc	e?

Appendix C

LEADERSHIP SCALE FOR SPORTS

Each of the following statements describes a specific behavior that a coach may exhibit. For each statement, there are five alternatives:

- 1 NEVER
- 2 SELDOM (about 25% of the time)
- 3 OCCASIONALLY (about 50% of the time)
- 4 OFTEN (about 75% of the time)
- 5 ALWAYS

Please evaluate your coach's behavior by circling the number which corresponds to the frequency with which your coach exhibits that type of behavior. Please answer all items.

	THE COACH OF MY TEAM	Never	Seldom	Occasionally	Often	Always
1	Sees to it that athletes work to capacity	1	2	3	4	5
2	Asks for the opinion of the athletes on strategies for specific competitions	1	2	3	4	5
3	Helps athletes with their personal problems	1	2	3	4	5
4	Compliments an athlete for a good performance in front of others	1	2	3	4	5
5	Explains to each athlete the techniques and tactics of the sport	1	2	3	4	5
6	Plans relatively independent of the athletes	1	2	3	4	5
7	Helps members of the group settle their conflicts	1	2	3	4	5
8	Does not take into account athletes suggestions when making decisions	1	2	3	4	5
9	Gets group approval on important matters before going ahead	1	2	3	4	5
10	Tells an athlete when the athlete does a particularly good job	1	2	3	4	5
11	Makes sure that the coach's function on the team is understood by all athletes	1	2	3	4	5
12	Does not explain his/her actions	1	2	3	4	5
13	Looks out for the personal welfare of the athletes	1	2	3	4	5
14	Instructs every athlete individually in the skills of the sport	1	2	3	4	5

15 Lets the athletes share in decision making	1	2	3	4	5
$_{16}$ Sees that an athlete is rewarded for a good performance	1	2	3	4	5
17 Controls what athletes can and cannot do	1	2	3	4	5
18 Encourages athlete to make suggestions for ways to conduct practices	1	2	3	4	5
19 Does personal favors for the athletes	1	2	3	4	5
20 Explains to every athlete what should be done and what should not be done	1	2	3	4	5
21 Lets the athletes set their own goals	1	2	3	4	5
22 Expresses any affection felt for the athletes	1	2	3	4	5
23 Expects every athlete to carry out one's assignment to the last detail	1	2	3	4	5
Lets the athletes try their own way even if they make mistakes	1	2	3	4	5
25 Encourages the athlete to confide in the coach	1	2	3	4	5
26 Points out each athlete's strengths and weaknesses	1	2	3	4	5
27 Refuses to compromise on a point	1	2	3	4	5
28 Makes decisions regardless of what athletes think	1	2	3	4	5
29 Gives specific instructions to each athlete on what should be done in every situation	1	2	3	4	5
30 Asks for the opinion of the athletes on important coaching matters	1	2	3	4	5
31 Encourages close and informal relations with athletes	1	2	3	4	5
$_{\rm 32}$ Sees to it that the athletes' efforts are coordinated	1	2	3	4	5
33 Lets the athletes work at their own speed	1	2	3	4	5
34 Keeps aloof from the athletes	1	2	3	4	5
35 Explains how each athlete's contribution fits into the total picture	1	2	3	4	5
36 Invites the athletes home	1	2	3	4	5

37 Gives credit when it is due	1	2	3	4	5
38 Specifies in detail what is expected of athletes	1	2	3	4	5
³⁹ Lets the athletes decide on plays to be used in a game	1	2	3	4	5
40 Speaks in a manner which discourages questions	1	2	3	4	5
41 Expresses appreciation when an athlete performs well	1	2	3	4	5
42 Figures ahead on what should be done	1	2	3	4	5
43 Pays special attention to correcting athletes' mistakes	1	2	3	4	5

Appendix D

Coaching Feedback Questionnaire

Directions: Listed below are six examples of the feedback your coach might have given to you after you had a <u>successful</u> performance in a game or practice. Please rate each statement in terms of how typical it was of the kind of feedback your coach gave you after you had a <u>successful</u> performance.

		Not at all typical			Very typical		
1	"Good play!"	1	2	3	4	5	
2	Coach ignores your good performance or play.	1	2	3	4	5	
3	"Way to go! You really extended your elbow that time."	1	2	3	4	5	
4	"Great play. Now you're keeping your eyes on the ball."		2	3	4	5	
5	"Excellent work in practice today."	1	2	3	4	5	
6	Coach doesn't say anything to you about your good performance or play	1	2	3	4	5	

Directions: Listed below are ten examples of the feedback your coach might have given to you after you made a <u>mistake or committed an error</u> in a game or practice. Please rate each statement in terms of how typical it was of the kind of feedback your coach gave you after a <u>performance error or poor play</u>.

		Not at all typical				Very typical
1	"That's O.K. Keep working at it!"	1	2	3	4	5
2	Coach ignores your error or poor performance	1	2	3	4	5
3	"That was a really stupid play."	1	2	3	4	5
4	"You dropped your elbow. Next time keep it up." "How many times have I told you to extend your	1	2	3	4	5
5	elbow?"	1	2	3	4	5
6	"Hang in there! You'll do better next time."	1	2	3	4	5
7	Coach doesn't say anything to you about your error or poor performance	1	2	3	4	5
8	"Your technique looks lousy! Keep your head up."	1	2	3	4	5
9	"That play sucked."	1	2	3	4	5
10	"No, that's not right, you need to work on a faster release."	1	2	3	4	5

Appendix E

The Group Environment Questionnaire Now, a few questions about your team sport experience. Please respond by checking a numerical response for each question using the following scale.

Stron	gly Disagree	!					Strongly	y Agree
1.	I do not enj 1	joy beir	ng a part 3	of the so	ocial acti 5	vities of 6	this tear 7	n. 8
2.	I am not ha	ippy wi	th the ar	nount of	playing	time I ge	et.	Q
3	I am not go	<u>,</u> ving to 1	J niss the	4 member	s of this	team wh	/ ven the s	o eason ends
5.	1 2	2 2	3	4	5	6	7	8
4.	I am unhap	py with 2	n my tear 3	m's leve 4	l of desin 5	re to win 6	7	8
5.	Some of m 1 2	y best f	riends an 3	re on thi 4	s team. 5	6	7	8
6.	This team of performance	does no ce.	t give m	e enougl	h opporti	unities to) improv	e my personal
_	1 2	2	3	4	5	6	7	8
7.	I enjoy othe	er partio 2	es more 3	than tear 4	m parties 5	6. 6	7	8
8.	I do not lik	e the st	yle of pl 3	ay on th 4	is team. 5	6	7	8
9.	For me, thi 1 2	s team	is one of 3	f the mos 4	st import 5	ant socia 6	al groups 7	to which I belong. 8
10.	Our team is 1 2	s united	l in tryin 3	g to reac 4	ch its goa 5	lls for pe 6	erforman 7	ce. 8
11.	Members or 1	of our te 2	am wou 3	ld rather 4	go out o 5	on their of 6	wn than 7	get together as a team.
12.	We all take 1	e respor	sibility 3	for any l 4	oss or po 5	oor perfo 6	rmance 7	by our team. 8
13.	Our team n 1 2	nember 2	s rarely	party tog 4	gether. 5	6	7	8
14.	Our team n	nember	s have c	onflictin	g aspirat	ions for	the team	's performance.
15.	Our team w	vould li	ke to spe	end time	together	in the o	ff-seaso	n.
16.	If members	s of our	team ha	ve probl	ems in p	ractice,	everyone	e wants to help them so
	1 2	back to	gether a 3	gain. 4	5	6	7	8
17.	Members o	of our te 2	am do n 3	ot stick	together 5	outside (6	of practi 7	ces and games. 8
18.	Members o	of our te	am do n	ot comn	nunicate	freely at	out each	n athlete's responsibilities
	during com	petitioi	1 or prac 3	tice.	5	6	7	8

Appendix F

Collective Efficacy Questionnaire

Instructions: Team confidence refers to a team's shared belief in its abilities to perform certain team skills during a competition. Rate your team's confidence below in terms of this past season.

Rate your team's confidence, in terms of this past season that your team has the ability to...

	Not at all Confident					_	r.		ctreme onfider	ely nt
1. Win events	0	1	2	3	4	5	6	7	8	9
2. Outplay the opposing team	. 0	1	2	3	4	5	6	7	8	9
3.Bounce back from behind if performing poo	orly 0	1	2	3	4	5	6	7	8	9
4. Come from behind to be successful	0	1	2	3	4	5	6	7	8	9
5. Resolve conflicts	0	1	2	3	4	5	6	7	8	9
6. Be psyched	0	1	2	3	4	5	6	7	8	9
7. Perform under pressure	0	1	2	3	4	5	6	7	8	9
8. Adapt to different situations	0	1	2	3	4	5	6	7	8	9
9. Carry out their roles	0	1	2	3	4	5	6	7	8	9
10. Keep cool under pressure	. 0	1	2	3	4	5	6	7	8	9
11. Be ready	0	1	2	3	4	5	6	7	8	9
12. Work hard as a team	0	1	2	3	4	5	6	7	8	9
13. Show more desire than other team	0	1	2	3	4	5	6	7	8	9
14. Show more ability than other team	. 0	1	2	3	4	5	6	7	8	9
15. Be united	. 0	1	2	3	4	5	6	7	8	9
16. Display sound fundamentals	0	1	2	3	4	5	6	7	8	9
17. Demonstrate physical ability	0	1	2	3	4	5	6	7	8	9
18. Remain in control in challenging situation	n. 0	1	2	3	4	5	6	7	8	9
19. Display a winning attitude	0	1	2	3	4	5	6	7	8	9
20. Persist in the face of failure	0	1	2	3	4	5	6	7	8	9
21. Give maximum effort	0	1	2	3	4	5	6	7	8	9
22. Coordinate efforts	0	1	2	3	4	5	6	7	8	9
23. Persist when obstacles are present	0	1	2	3	4	5	6	7	8	9

24.	Be successful	0	1	2	3	4	5	6	7	8	9
25.	Maintain composure when calls go	. 0	1	2	3	4	5	6	7	8	9
	against you										
26.	Demonstrate a strong work ethic	0	1	2	3	4	5	6	7	8	9
27.	Stay in the game when it seems like	0	1	2	3	4	5	6	7	8	9
	your team isn't getting any breaks										
28.	Set goals	0	1	2	3	4	5	6	7	8	9
29.	Be mentally tough	0	1	2	3	4	5	6	7	8	9
30.	Work through difficult situations	0	1	2	3	4	5	6	7	8	9
31.	Get motivated	0	1	2	3	4	5	6	7	8	9
32.	Maintain its focus	0	1	2	3	4	5	6	7	8	9
33.	Play to its capabilities	0	1	2	3	4	5	6	7	8	9
34.	Recognize your opponents weaknesses	0	1	2	3	4	5	6	7	8	9
35.	Play well without your best player	0	1	2	3	4	5	6	7	8	9
36.	Mentally prepare for competition	0	1	2	3	4	5	6	7	8	9
37.	Keep a positive attitude	0	1	2	3	4	5	6	7	8	9
38.	Adequately prepare	0	1	2	3	4	5	6	7	8	9
39.	Play more skillfully than the opponent	0	1	2	3	4	5	6	7	8	9
40.	Perform better than the opposing team(s)	0	1	2	3	4	5	6	7	8	9
41.	Show enthusiasm	0	1	2	3	4	5	6	7	8	9
42.	Maintain control	0	1	2	3	4	5	6	7	8	9
43.	Overcome distraction	0	1	2	3	4	5	6	7	8	9
44.	Stay motivated	0	1	2	3	4	5	6	7	8	9
45.	Physically prepare for this competition	0	1	2	3	4	5	6	7	8	9
46.	Devise a successful strategy	0	1	2	3	4	5	6	7	8	9
47.	Maintain effective communication	0	1	2	3	4	5	6	7	8	9
48.	Appear confident in front of others	0	1	2	3	4	5	6	7	8	9
49.	Concentrate	0	1	2	3	4	5	6	7	8	9