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# Relationship Among Team Collective Efficacy, Cohesion, and Coaching Competency in Sports

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# RELATIONSHIP AMONG TEAM COLLECTIVE EFFICACY, COHESION, AND COACHING COMPETENCY IN SPORTS

by

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# ABSTRACT

Relationship Among Team Collective Efficacy, Cohesion,

and Coaching Competency in Sports

by

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A team's performance in any sport can be predicted by many factors. Some of these factors include team collective efficacy, team cohesiveness, and coaching competency. Currently, there is little research investigating the relationships among teams' beliefs about their capabilities, their level of cohesion, and their perceptions of coaching competency on overall sport performance. The purpose of this study was to document the relationship among collective efficacy, cohesion, and coaching on sport performance in a sample of university athletes. The objectives of this study were to identify the level of cohesion, collective efficacy, and perceptions of coaching competency by each athletic team at the university, and to identify the relationships among each of these variables in regard to sport performance. Participants were 163 collegiate athletes involved in eight sports at Utah State University during the 2005-2006 academic year. Correlational analysis revealed significant positive relationships with

collective efficacy, cohesion, and coaching competency. Multi-level modeling and linear regression analyses revealed that collective efficacy was a significant predictor of win/loss percentage, whereas some aspects of cohesion and coaching competency were seen as predictors of collective efficacy.

(105 pages)

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Clayton T. Manning

CONTENTS

Page

Page

Page

# LIST OF TABLES

Table Page

# CHAPTER I

## INTRODUCTION

A team's performance in any sport may be predicted by many factors including team collective efficacy, team cohesiveness, coaching competency, competitiveness, athleticism, and years together. In team sports, understanding the impact that different factors have on a team's performance can be used to increase the likelihood of a successful outcome or better performance. Furthermore, understanding the relationships among key factors should increase the ability to successfully utilize team strengths and offset weaknesses, ultimately better impacting whether a team succeeds or fails.

Team cohesion was the first and is the most researched factor in the sport psychology literature (Carron, Widmeyer, & Brawley, 1985). Furthermore, cohesion as a factor in team composition has impacted not only sport teams, but teams in a variety of other context (e.g., business, military, and psychology). There is a sizeable research base in cohesion to support its importance in the sport psychology world. It has been effectively studied in the sports world for over 40 years and the idea of cohesion can be seen in literature dating back to the late 1930s (Lewin, 1935) and 1940s (Cattell, 1948), with the bulk of research culminating over the late 1970s and 1980s through the early 2000s. In fact, the concept of "team" and its importance can be seen as early 550 B.C., when Aesop formulated the phrase well known today as "United we stand, divided we fall." The relationship between cohesion and performance has been found to be positive with research showing that high levels of cohesion in teams are a predictor of better team performance. This finding is one of the most important findings in sports psychology literature because of its impact on coaching, performance, and group dynamics. More

and more coaches are looking at the team as a whole and have become more interested in how the team interacts both on and off the field. More recently, teams are built for the purposes of maximizing player skill as it relates to the team as a whole and not the individual performance, and has given rise to slogans and mottos such as "Players Play…but Teams win" and "There is no I in Team" that are seen in many locker rooms across the world from the little league level to professional sports.

Cohesion has dominated the sports psychology field and research investigating group performance for over three decades; however, in recent years attempts to investigate other important factors affecting team performance have begun to surface. More and more research is beginning to recognize the complexities that often impact cohesion and can quite possibly impact sport performance. Currently, it is unknown how cohesion impacts or is impacted by other factors that effect team performance. As research continues to expand in sports psychology, we have begun to see new factors emerge (e.g., collective efficacy and coaching competency) that are beginning to show a positive impact on team performance, similar to that of cohesion.

Of recent interest in the area of team research is "collective efficacy" or the team's collective or shared perception of their ability and their level of competency. Across the past decade, researchers have sought to understand the impact of collective efficacy on performance. Currently, much of the literature on collective efficacy focuses on collective efficacy and team performance, collective efficacy and team cohesion, or collective efficacy in general (Bandura, 2000; Gully, Incalcaterra, Joshi, & Beaubien, 2002; Heuze, Raimbault, & Fontayne 2006; Hodges & Carron, 1992; Katz-Navon &

Erez, 2005; Ronglan, 2007; Tasa, Taggar, & Seijts, 2007). However, this factor has only recently been given attention in the sports world and compared to the impact that cohesion plays in sport performance. The cognitive processes associated with individuals on a team and their internal beliefs about the team's capabilities is at the fore front of research in sport psychology and has yet to develop well-established findings as cohesion. Furthermore, there is little research investigating collective efficacy's effect on other performance factors. However, the current literature to date looks promising and future research will most likely strengthen the current hypotheses that collective efficacy is a significant factor impacting sport performance.

Just as collective efficacy is beginning to change some views on the necessary factors important for successful outcome, some focus has been on athlete's perceptions of coaching competency and how the perceptions impact successful team performance. Coaching efficacy has been studied for years, but only recently have others' perceptions of leadership (coaching) been investigated. Currently, there is little research available and even less research concerning the effects that perceptions of coaching competency have on other sport performance variables. Recently, focus in research has shifted from studying coaching efficacy or competency from the coach's standpoint or perception to athlete perceptions of coaching competency. There appears to be a significant gap in the current literature investigating athlete perceptions of coaching competency, especially as a possible predictor of overall sport performance. This shift in focus from the coach to the athlete appears to be important in how a team views its leadership and overall capability, but how important has yet to be established. Given the recent shift in focus from coach to

athlete perceptions, research trying to link cohesion and collective efficacy with team (athlete) perceptions of coaching competency has not been well studied (e.g., Heuze, Sarrazin, Masiero, Raimbault, & Thomas, 2006).

As the individual variables have been identified as potentially important, some researchers have begun looking at how two variables (e.g., cohesion and collective efficacy) combine to impact team performance. Research findings have identified cohesion and collective efficacy as two important group variables positively related to team performance (Carron, Colman, Wheeler, & Stevens, 2002; Heuze et al., 2006; Hodges & Carron, 1992; Myers, Feltz, & Short, 2004; Watson, Chemers, & Preiser, 2001). Basically, sport teams with a higher sense of cohesion and higher efficacy for the team were more likely to perform better at the sport. Although these findings are promising, the research base to date has been limited and these variables have only been extensively researched within the last few years. Despite the fact that these findings are not yet well established, there does appear to be a trend emerging that supports the positive relationship between cohesion, collective efficacy, and performance.

Research is beginning to show that teams with both greater collective efficacy as well as teams with more competent coaches are more successful. However, there is little research documenting findings for perceptions of coaching competency from an athlete perspective especially when related to collective efficacy and cohesion (e.g., Heuze et al., 2006). The literature has investigated one or two of the factors together, but has not attempted to research the interrelationships among all of the factors and their impact on sport performance.

Team performance is the foundation of sport psychology and significant research has been conducted on improving team performance over the last half century. Research has shown the importance of cohesion on team performance and the impact that both a collective efficacy and coaching competency play on team performance. However, the current focus in sport psychology has not yet begun to take these factors together and investigate their overall relationships to each other and overall impact on successful team performance. The importance of understanding the interrelationships among these factors lies in the idea that there are no single predictors of successful team performance in the sport psychology literature, and within the last decade more and more factors are being identified. As such, it is necessary to investigate how each factor contributes to overall team performance so that more effective strategies can be used to increase these team factors.

Thus, the purpose of the present study was to determine how measures of cohesion, collective efficacy, and team perceptions of coaching competency are related among collegiate athletes participating in particular interactive team sports. Furthermore, given the limited research investigating two of the factors (cohesion and efficacy) and even less research investigating three key factors, there appears to be a current lack of important information in the research world that may benefit sport psychology and further help to understand the complex nature of successful team performance. This study focused on teams from various sports including soccer, football, basketball, rugby, hockey, lacrosse, and softball with athletes rating team collective efficacy, their individual perceptions of coaching competency, and cohesion. The athlete ratings were

then compared to a specific performance variable (win/loss ratio) as well as each other. This analysis allowed evaluation of the importance of each factor and the combination or interrelationship of the factors as it pertains to sport performance. This understanding may be instrumental in developing strategies and techniques that target each factor (collective efficacy, coaching efficacy, cohesion) so as to increase team sport performance. This information might also be important for coaches and sport organizations when deciding how to allocate time and resources to help a team develop the necessary components and skills to perform to the best of its ability.

# CHAPTER II

## REVIEW OF LITERATURE

The following integrative review of literature has been organized into four major sections. The purpose of this review is to analyze and synthesize the previous research that has been conducted on cohesion, collective efficacy, and coaching competency. The first section provides a review of the team cohesion literature and its relationship to performance. The second section provides a review of collective efficacy literature and its relationship to sport performance. There is a body of research that has investigated some of the relationships between these factors and as such, the final two sections review the limited research that has investigated these relationships (e.g., coaching and performance, coaching and cohesion, collective efficacy and cohesion). Overall, the objectives for this review are:

1. To report research on cohesion, collective efficacy, and coaching competency;
2. To determine any relationships among these factors and their impact on sport performance;
3. To discuss the strengths and weaknesses of previous research in the area of sport performance; and
4. To make conclusions from this review to determine areas of future research with sport performance.

## Cohesion and Sport Performance

Cohesiveness as it relates to team sports has been defined in many ways over the last 50 years. Paskevich, Estabrooks, Brawley, and Carron (2001) explored the origin of the word cohesion, which came from the Latin word *cohaesus* meaning to cleave or stick together. They defined cohesion as the "total field of forces" that act on individual group members to remain in the group. In sport psychology, cohesion has been thought of 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" (Paskevich et al., p. 472). Gammage, Carron and Estabrooks (2001) add that there is an assumption explicit in the definition of cohesion that group cohesion facilitates performance, productivity, and achievement. Turman (2003) also used a definition for cohesiveness that he adopted from Bollen and Hoyle, stating that cohesion is "an individual's sense of belonging to a particular group and his or her feelings of morale associated with membership in groups" (p. 87). This belonging can be seen by team members sacrificing individualized glory and achievement for that of the team (e.g., cycling). For this study, Paskevich and colleagues' (2001) definition of cohesion is used.

The effectiveness of sport teams in competition is dependent upon many factors. The ability of each member to work together is one factor. In research on sports teams, "affiliation" or cohesion is one of the two most frequently cited motives for participating in organized sports. This ability to work together or cohesiveness is often referred to by a coach as group integration or morale (Martens & Peterson, 1971). Coaches are frequently

interested in how to build and maintain cohesion in sport teams. Furthermore, cohesiveness contributes both to development and maintenance of the group and to the accomplishment of the group's goals (Carron, Widmeyer, & Brawley, 1988). Even though a multitude of researchers in sport psychology agree that cohesiveness and team performance are related, researchers have yet to identify whether cohesiveness leads to greater performance or greater performance leads to cohesiveness.

After reviewing the extensive literature with cohesion, it is safe to say that both greater performance and higher group cohesiveness create a complex, intertwined relationship. For this analysis, three meta-analytic reviews on cohesion and sport performance have been conducted (see Table 1). The most recent review conducted by Carron and colleagues (2002) reviewed 55 studies concerning cohesion and performance and used over 1,000 teams. They concluded a moderate-to-large

Table 1

*Cohesion and Performance Meta-analysis*

| Author | Sample | Results |
|---|---|---|
| Carron, Colman, Wheeler, & Stevens (2002) | 55 studies<br>9,988 athletes from 1,044 teams<br><br>All sport teams | *ES* = .655<br>*ES*=.730 for published versus .507 nonpublished<br>*ES* = .692 for correlational studies |
| Gully, Devine, & Whitney (1995) | 46 studies<br>Total *N* = 12,115<br><br>Both sport and non-sport teams | *ES* = .166 |
| Evans & Dion (1991) | 16 studies<br><br>All sport teams | *ES* = .419 |

(*ES* = .66) between cohesion and performance based on an analysis of 164 effect sizes. The authors also conducted analyses comparing published versus nonpublished studies as well as on only correlational studies. Given the range of effect sizes from small to large among all three meta-analyses, it should be noted that Carron and colleagues used only research investigating sport teams. Gully and colleagues (1995) used studies representing not only sport teams but other nonsport teams. They used a total of 46 studies to investigate cohesion and performance. Fifty-one effect sizes were computed. They determined that there was a complex relationship between cohesion and performance, more than what was previously thought. Evans and Dion (1991) also used only sport teams in their meta-analysis. They investigated 16 studies and computed 18 effect size estimates and found moderately strong effect sizes in a positive direction suggesting a distinct relationship between cohesion and performance. Given the differences in samples, one possibility for explaining the differences in effect sizes from the three meta-analyses conducted on cohesion and sport performance during a 10-year period could be the use of sport and nonsport teams. The nonsport teams used in Gully and colleagues' research were experimentally teams that may have not had enough time to create a cohesive team and generally may have been less interactive than the sport teams. As such, a smaller relationship with cohesion and performance may be seen in nonsport teams than with sport teams.

The three meta-analyses discussed above provide positive results concerning the relationship between cohesion and performance. These meta-analytic reviews lend support for the hypothesis that cohesion and performance have a positive relationship in

sports. However, they do not give a good picture as to what individual studies investigating cohesion and performance look like and have found. Understanding how cohesion relates to performance helps to understand how specific factors impact overall team performance because it allows a more in-depth analysis of cohesions importance. Therefore, the following section provides a narrative of some of the studies included in the meta-analyses discussed above (i.e., specifically in the Carron et al., 2002 meta-analysis). There has been no further research on cohesion and sport performance since Carron and colleagues' meta-analysis.

Most research suggests that teamwork and closeness often discriminate between successful and unsuccessful teams (Carron & Chelladurai, 1981). Ball and Carron's (1976) research on 15 coaches and 183 athletes on ice hockey teams found that teamwork/ closeness was most important in accounting for the variability in postseason success. This closeness and teamwork can be considered an aspect of cohesiveness that is necessary for better performance.

Sport teams depend on many different aspects to compete and perform well on a task. One aspect is that the cohesion-performance issue can be classified based on the type of interdependence present. Carron and Chelladurai (1981) argued cohesion is conceptually linked to performance by facilitating effective interaction and such a relationship is applicable only to those sports where interaction and coordination is a predominant predictor of performance. Boone, Beitel, and Kuhlman (1997) used four baseball teams, where two teams had winning records for a season and two teams had

losing records ($n$ = 65). They found that losing negatively affected the team's level of cohesion on three out of the four subscales over time.

It is interesting to note that in some sports where there is no dependence on other team members for success (e.g., coacting sports such as golf) research has been conducted on the effect of cohesiveness and performance. Williams and Widmeyer (1991) studied golfers and found that cohesiveness relates positively to performance. Nixon (1977) cited research proposing that cohesiveness was enhanced by successful team performance for interacting-type teams and by unsuccessful team performance for coacting-type teams. For this study only interacting or interdependent teams are used. Overall, however, research on cohesion and performance show a positive trend toward higher team cohesion and increased sport performance.

## Collective Efficacy and Performance

Each team members' belief about the overall team's effectiveness in a competitive situation is collective efficacy, and this efficacy appears to have some bearing on a team's success. Collective efficacy has also been defined by Bandura (1997) as a group's shared belief in its capacities to organize and execute actions to produce a desired goal. Collective efficacy, often used interchangeably with team efficacy, can be seen as the extension of Bandura's self-efficacy theory to groups. It concerns judgments that people make about a group's level of competency (George & Feltz, 1995). Collective efficacy is similar to individual self-efficacy and was developed within the framework of the social cognitive theory. Collective efficacy can be seen as a cognitive mechanism that

focuses on motivation, thought patterns, and behavior from a team level. Bandura argued that merely summing each member's individual self-efficacy is insufficient. Instead, an aggregated form of collective efficacy that involves assessing each team member's belief in the "team's capabilities" as a whole and then aggregating these individual measures to the team level is reported by Bandura to be more predictive of team performance.

The importance of collective efficacy has been argued depending on the type of sport being played. It has been argued that collective efficacy may be a more complex construct than self-efficacy and is dependent on the degree of interdependence of team members. The confidence that an individual athlete places on his/her team may even predict team performance more than the confidence the individual athlete places on his/her own individual abilities (Feltz & Lirgg, 2001). Those teams in which interaction and interdependence are required to be successful (e.g., volleyball, football) place much more importance on collective efficacy than teams in which there is less interaction and interdependence (e.g., baseball, gymnastics).

Three group-level aspects of collective efficacy have been defined in the literature. These aspects can be seen as: group composition, previous group experiences, and leader effectiveness. Group composition may impact high and low perceptions of collective efficacy (Feltz & Lirgg, 1998, 2001). Previous experience has been seen to be a strong source of efficacy for individuals and the same can be argued for teams. Shamir, House, and Arthur (1992) argue that a team's collective efficacy is influenced by exceptional leadership. Modeling confidence, contributing to their team's smooth functioning, and persuasion, all factors of leader effectiveness, can improve performance

and increase collective efficacy. Research on collective efficacy has grown in recent years, but there continues to be a lack of data on the significance of collective efficacy and sport performance. Only six studies were found in the literature investigating collective efficacy and performance during the last decade. All six studies are reviewed below.

Four of the six studies reviewed presented results of moderate-to-large relationships between collective efficacy and performance. Of the two studies who did not find a significant relationship between collective efficacy and performance, there are many concerns with methodology and their overall conclusions. Maclean and Sullivan (2003) only used a total of 12 subjects from one team for their conclusions. No comparison with other teams, no use of any control groups and an inadequate sample size severely weaken any conclusions that can be drawn from their study. However, the authors concluded that no consistent relationships were found between collective efficacy and performance. Furthermore, Lichacz and Partington (1996) developed a rope-pulling task and used 25 undergraduates. They used athletes from different teams and a task that was not similar to the athletes' particular sport, which may have impeded the importance of collective efficacy. However, Lichacz and Partington still found a positive relationship ($r$ = .27) for performance and collective efficacy and concluded that positive performance feedback and task salience associated with prior performance history were two motivational forces of perceived collective efficacy that impacted performance efficiency. Their results, however, were small-to-medium in comparison to the other four studies investigating collective efficacy and performance.

The remaining four studies appear to have stronger methodology regarding collective efficacy and performance, given larger samples and multiple teams used in the research. Feltz and Lirgg (1998) followed six ice hockey teams over the course of one season. Individual and collective efficacy was assessed prior to each competitive event, and results showed that collective efficacy was affected by performance outcome. They found that aggregated team efficacy beliefs are a stronger predictor of performance than player efficacy beliefs. Myers, Payment, and Feltz (2004) studied 12 women's ice hockey teams and found that coaches, on average, expect his/her team's sense of collective efficacy prior to performance to impact the team's performance. They concluded that there is a reciprocal relationship between collective efficacy and performance, and because collective efficacy is amenable to change, managers and team leaders should try to use techniques to improve the team members' sense of collective efficacy. They also found that previous performance and collective efficacy were both likely to impact subsequent team performance. Myers, Feltz, and Short (2004) used 197 football players and found that aggregated collective efficacy prior to performance positively influences offensive performance over time. They found a positive effect size of .61.

Even in nonsport, experimental studies, the impact of previous performance has an impact on collective efficacy. Bray (2004) used a muscular endurance task with 37 male and female triads ($n$ = 111) and found that although proven capabilities of a group's previous performance contributes largely to its future performance, what members come to believe about their collective capabilities also plays a significant role in performance.

As can be seen in Table 2, the few studies reviewed find that teams with a high sense of collective efficacy perform better than teams with a lower sense of collective efficacy. Overall, this review of literature concerning collective efficacy and performance suggest a moderate positive relationship between collective efficacy and performance. The trend appears to show that a team who reports a higher sense of collective efficacy to have more of a chance to perform better in the sport. Of course, this

Table 2

*Collective Efficacy and Performance*

| Author | Sample | Measures | Results |
|---|---|---|---|
| Bray (2004) | 37 subjects (14 male, 23 female) | Collective efficacy scale<br>Muscular endurance task | $r$ =.73 between performance and collective efficacy |
| Myers, Feltz, & Short (2004) | 197 intercollegiate football players (offensive players from 10 teams) | Offensive performance<br>Collective efficacy | Positive effect (.61)<br>$B$ = .29 ($Z$ = 2.89) significant |
| Myers, Payment, & Feltz (2004) | 51 women ice hockey players (12 teams) | Hockey specific Collective efficacy measure<br>Performance measures | Moderate and positive effect of collective efficacy and performance (.56) |
| Maclean & Sullivan (2003) | 12 basketball players from one team | Collective Efficacy for Sports Questionnaire<br>Performance Measures | No effect size or statistic found. Positive relationship b/t coll. Efficacy and perf. |
| Feltz & Lirgg (1998) | 159 male ice hockey players | Collective efficacy measure<br>Performance measures | *rs* for each team range from -.04 to .50) for collective efficacy and performance<br>$Z$ = 3.80 significant effect |
| Lichacz & Partington (1996) | 25 male undergraduates (7 rowing athletes, 4 basketball, 14 non-athletes) | Collective efficacy measure<br>Rope pulling task | $r$ = .27 between collective efficacy and performance |

research is relatively new and due to the limited research, a definite conclusion regarding collective efficacy and performance cannot be made. Continued research investigating this relationship is necessary because of the paucity of research in this area.

One additional study was reviewed that had investigated collective efficacy and performance in a different manner than the above studies. Myers, Payment, and Feltz (2007) extended their research on female ice hockey teams and investigated summative team performance capabilities over the course of a competitive task. Myers and colleagues argued that most researchers have accepted collective efficacy as a positive predictor of sport performance, but most were "limited by temporal disparity between assessments of collective efficacy and subsequent team performance" (p. 2). They attempted to circumvent this "flaw" by basing their findings on summative team performance capabilities and team performance at additive intervals during a competition (e.g., during each period in a hockey game). They used the same data from the Myers and colleagues (2004) research and assessed 12 female ice hockey teams. Results of the study revealed that collective efficacy is a statistically significant predictor of team performance. They did argue that a team's collective efficacy prior to the competition may be relatively stable during the performance, suggesting that a summative team performance may not be as important in assessing collective efficacy. Again, collective efficacy is seen as a predictor of performance. Limitations to this study were the use of the relatively small sample size.

## Coaching and Performance

Coaching is a complex task and requires the use of different strategies and behaviors to fulfill many expectations. Coaching competency is made up of many different variables, of which the research has identified coaching efficacy and coaching perceptions. Coaching efficacy appears to be part of coaching competency. Coaching efficacy can be seen as the extent to which coaches believe they can affect the learning and performance of their athletes (Vargas-Tonsing, Warners, & Feltz, 2003). Coaches need to have the ability and confidence to adapt the style of play to the strengths of their players and adjust the team's play to the strengths and weaknesses of the opponents. Fung (2002) described four dimensions of coaching efficacy. These dimensions include motivation, strategy, technique, and character building. In coaching efficacy, motivation can be described as the competence in motivating athletes to train, and enhancing team cohesion. Strategy is described as the competence in planning and implementing strategy. This can be seen in how flexible the coach is in his ability to adjust the team's play as the game progresses. Technique is the competence in the technical aspects of coaching the sport, and character building is the competence in promoting sportsmanship and positive attitude towards sports (Fung).

Coaches' perceptions of an athlete's performance may impact the athlete's or team's success in the sport. Furthermore, these perceptions may also influence the cohesiveness of the team, which in turn impacts the team's performance. Five studies were found that investigated either coaching and performance, coaching and cohesion, or coaching and collective efficacy. As can be seen in Table 3, two studies specifically

Table 3

*Literature Reviewing Coaching*

| Author | Sample | Variable | Results |
|---|---|---|---|
| Turman (2003) | Phase 1:<br>15 male<br>15 female<br>Phase II:<br>12 male | Coaching<br>Cohesion<br>Performance | No statistic –<br>Coaching behaviors<br>do impact cohesion |
| Vargas-Tonsing, Warners & Feltz (2003) | 133 female athletes – volleyball | Collective efficacy<br>Coaching | $r = .85$<br>$R2 = .72$ |
| Shields, Gardner, Bredemeier, & Bostrom (1997) | 187 baseball (male)<br>118 softball (female) | Cohesion<br>Coaching<br>Performance | $F = 11.79$ significant<br>$r = .53$ |
| Gardner, Shields, Bredemeier, Bostrom (1996) | 307 athletes representing 23 teams | Coaching<br>Cohesion | $F = 11.79$<br>$r = .53$ |
| Wester & Weiss (1991) | 182 football players | Cohesion<br>Coaching | $F = 4.99$<br>$r = .45$ |

investigated coaching and cohesion, two studies evaluated coaching, cohesion, and performance, and one investigated relationships between collective efficacy and coaching.

Of the four studies that involved coaching and team cohesion, all reported significant relationships (range of correlation from .45 to .53) between perceived coaching behaviors by the players and team cohesion. Three of the four used correlations and show a moderate to large relationship. Turman (2003) argued that the way leaders promote and create high levels of group cohesion have a dramatic effect on the way a group performs. He used a case study design, which did not lend itself to any comparison with the other three studies and becomes difficult to interpret the results of this study in

the context of the other three studies. He used 15 male and 15 female athletes who completed an open-ended survey in his study. Ten of the 30 students indicated that the coaches' speeches made the team more cohesive and united. Furthermore, embarrassment and ridicule by the coach was found to decrease cohesion. His findings lend some support to the idea that the coach plays an important role in developing group cohesion.

Wester and Weiss (1991) used high school football players ($n$ = 182) and found a statistically significant relationship ($r$ = .45) between the coaches' behavior as rated by the players and team cohesion as measured by a cohesion and leadership satisfaction questionnaire. Coaches who were perceived by their athletes as exhibiting higher frequencies of instruction, positive feedback, social support, and a democratic style of leadership were associated with those teams that perceived themselves as having a higher level of task cohesiveness. Shields and colleagues (1997) used baseball and softball players ($n$ = 189 and 119, respectively) representing six community colleges and six high schools. Their results supported the relationship between cohesion and coaching behaviors. Specifically, they found strong task cohesion relating to styles of leadership where the style is strong in training and instruction, social support, democratic behaviors and positive feedback ($r$ = .53). Overall, there appears to be a moderate relationship in the research investigating coaching behaviors and cohesion. However, given the small number of studies in this area, more studies are needed to validate these conclusions.

Only one study was found investigating collective efficacy and coaching. Vargas-Tonsing and colleagues (2003) used female athletes ($n$ = 133) from 12 high school volleyball teams and investigated the strength of the relationship of coaching efficacy on

both individual and collective efficacy beliefs. They found coaching efficacy beliefs to be a significant predictor of team efficacy beliefs ($r$ = .85), but not for individual self-efficacy beliefs. Such confounds as the possibility of the players developing skill specific efficacy and the use of measures designed mainly for team efficacy may have skewed their results. No specific measure of self-efficacy was used. However, they reported that coaches are likely to influence their athletes' efficacy beliefs about the team just as much as they influence individual self-efficacy beliefs.

Given that only one study was found investigating coaching behaviors and collective efficacy, future research concerning these factors in sport psychology could enhance the information available in this area. The significant relationship found between perceived leader behaviors and cohesion with the other three studies and Turman's (2003) finding that a third of the athletes reported that coaches behaviors influence cohesion, a common metric among all four studies can simply be that leader behaviors do appear to have a positive relationship with team cohesion.

## Collective Efficacy and Cohesion

Five studies investigating team collective efficacy and cohesion were identified. Internet literature searches, dissertation abstracts and reference tables of identified studies were used to locate specific studies. Table 4 presents the results of these studies. Spink (1990) used an extreme group's design and discriminant analysis and argued that self-efficacy and collective efficacy may be differentially related to teams, and teams should be treated differently than individuals when it comes to enhancing confidence. He

Table 4

*Collective Efficacy and Cohesion Literature*

| Author | Sample | Results |
|---|---|---|
| Heuze, Sarrazin, Masiero, Raimbault, & Thomas (2006) | 124 female athletes (basketball and handball) | Perceptions of a task-involving climate positively predicted the changes in GI-T ($B$ = .29) and Collective efficacy ($B$ = .21) |
| Heuze, Raimbault, & Fontayne (2006) | 154 male basketball players | GI-T predicted by collective efficacy ($B$ = .39) |
| Kozub & McDonnell (2000) | 96 male rugby athletes | $r$ = .21 to .50 among cohesion and efficacy scores<br>Cohesion predictors<br>$B$ = .36 (GI)<br>$B$ = .34 (ATG) |
| Paskevich, Brawley, Dorsch, & Widmeyer (1999) | 70 volleyball players (47 men, 23 women) | GI-T & ATG-T $R$ = .35 and .41 for offense<br>.45 and .37 for communication<br>.51 and .52 for motivation<br>.37 and .35 for team confidence<br>.50 and .39 for general obstacles<br>All significant |
| Spink (1990) | 92 volleyball players | Univariate $F$'s for ATG-T = 14.53 and GI-S = 7.80 |

*Note*: GI = Group Integration, ATG= Individual Attraction to the group

administered collective efficacy and cohesion measures to 92 volleyball players and concluded that perceptions of cohesion were positively related to collective efficacy of elite teams but not recreation teams.

Paskevich, Brawley, Dorsch, and Widmeyer (1999) examined collective efficacy and cohesion's relationship to performance in volleyball teams as well. They administered collective efficacy measures and a cohesion measure to 70 volleyball players over one season. Their results showed that perceived collective efficacy and cohesion increased over the course of the season. They reported that a high level of collective efficacy is related to a high level of task cohesion ($r$ = .35 and .41).

Furthermore, previous experience coupled with a high sense of collective efficacy appears to impact performance in a positive manner. Kozub and McDonnell (2000) hypothesized that cohesion was a factor with considerable potential to influence collective efficacy. Their findings from 96 male rugby players indicated that there was a statistically significant relationship among the four dimensions of team cohesion and collective efficacy ($r$ = .21 to .50) suggesting that high cohesion was related to high collective efficacy. Overall, there was a moderate positive relationship reported in the literature concerning collective efficacy and cohesion.

More recent research (i.e., Heuze, Sarrazin, et al., 2006; Heuze, Raimbault, et al., 2006) have investigated mediating effects between collective efficacy and cohesion as well as the perceived motivational climate. Both studies found positive predictability between cohesion and collective efficacy, with Heuze, Raimbault, and colleagues specifically reporting the Group Interaction-Task subscale of the Group Environment Questionnaire as a predictor of higher collective efficacy scores. Their argument is that athlete's individual performances contribute to their perceptions of collective efficacy, which in turn contribute to their perceptions of cohesion. Heuze, Sarrazin, and colleagues (2006) focused on the motivation climate and how perceptions of this climate influenced cohesion and collective efficacy. They found that more task-involving climates positively predicted changes in perceptions of cohesion and efficacy over more ego-involving climates. A limitation to Hueuze, Sarrazin, and colleagues was that they were only able to measure these perceptions at the individual level and not at a group level, given their small sample size.

## Summary

Sport performance is influenced by many factors. Factors such as collective efficacy, coaching, and team cohesion are related to the success of sports teams. However, research considering how these factors interact is sparse. The research reviewed above provides support for the impact that cohesion, collective efficacy and coaching have on performance. Furthermore, as pointed out above, positive relationships have been found between cohesion and performance, collective efficacy, and performance, coaching and performance, and cohesion and collective efficacy. However, these variables also appear to influence one another. A better understanding of how each factor influences the other makes it difficult to investigate the impact of each factor on team performance, because there is no clear understanding if or how each factor impacts performance or each other. Heuze, Raimbault, and colleagues (2006) have only recently begun to explore these relationships, but only with two of the proposed factors in this study (cohesion and collective efficacy). Research needs to continue in this way in order to understand how theories of motivation, especially collective efficacy, team cohesion, and coaching competency interact, and impact team performance in sports. Currently research has only taken a few of these factors and investigated their impact in sports. The new trend needs to be incorporating each factor in sport research so that a more comprehensive understanding of the relationships these factors have on teams can be accomplished.

## Purpose and Research Questions

There is a need to expand the research concerning the relationship between cohesion, collective efficacy, and coaching in sport performance. Current research in sport psychology continues to focus on individual factors and loses the importance of how multiple factors interact within a team to impact performance. The current study attempted to contribute to the research literature about the relationships cohesion, collective efficacy, and coaching competency have on each other and on overall team performance. The purpose of this study was to document the relationship among collective efficacy, cohesion, and coaching on sport performance in a sample of university athletes. Variables assessed in this study include: collective efficacy, athlete perceptions of coaching competency, cohesion as well as sport specific performance variables (e.g., win/loss percentage).

## Research Questions

The following research objectives will be addressed in this study:

1. What is the level of cohesion identified by each athletic team studied at the university?

2. What is the level of collective efficacy identified by each athletic team studied at the university?

3. What are the perceptions of coaching by teams towards the coaching staff at the university?

4. What are the relationships among and predictability of collective efficacy, cohesion, athlete perceptions of coaching competency, and overall sport performance?

# CHAPTER III

# METHOD

## Population and Sample

The target population for which this study attempts to generalize are university athletes involved in scholarship or club sports in the areas of: basketball, football, rugby, hockey, soccer, lacrosse, and softball. The accessible population consisted of college athletes at Utah State University who participated in a scholarship or club sport team during the fall and spring semesters of 2005-2006. Athletes were male and female students currently competing on interactive teams in the following sports: basketball, rugby, football, hockey, soccer, lacrosse, and softball. These sports have a high degree of interaction among the players, which often allows for more "teamwork" and interaction. Teams such as gymnastics and golf were not chosen due to less interaction among athletes. An accessible sample of 163 athletes at Utah State University was used. Of the 163 athletes sampled, 47 participated in football, 12 participated in basketball, 17 participated in hockey, 28 participated in soccer, 28 participated in rugby, 21 participated in softball, and 10 participated in lacrosse.

## Procedures

A contact letter approved by Utah State University's Institutional Review Board (IRB) was sent to the coach/manager of each target team (see Appendix A). Each coach was informed of his/her right to decline the request for the team to be involved in the

study. Teams were chosen based on a representative sample of teams of both genders, team availability, and degree of team interaction (basketball over gymnastics). Ten team coaches were contacted, with eight coaches consenting to research and two coaches declining to participate. During administration of the questionnaires to the athletes, no athletes declined participation. However, not all athletes were present at the time of data collection.

Consent forms and questionnaires were given to each player to complete individually during one sitting. Data was collected after completion of practice at each team's respective practice location. The principal investigator or research assistant was on hand to read, receive, and catalog each completed measure from the athlete. Administration of the questionnaires required approximately 20 minutes. The order of administration of the questionnaires was as follows: general questionnaire, collective efficacy measure, cohesion measure, and coaching competency measure. The administrator (i.e., principal investigator) read through a script explaining the study and questionnaires. The script included specific instructions for collecting informed consent, administration of the surveys, and relaying information about contacting the researcher concerning research findings. The script and questionnaires can be found in Appendix B.

Athletes completed three measures at one point (i.e., midseason) during their respective seasons that were designed to investigate collective efficacy, team cohesion, and coaching competency during the midpoint of each season. Administration of the questionnaires took place within the 2 weeks before or after the midpoint of each team's respective season. Research suggests allowing the team an adequate amount of time to

develop cohesion and beliefs about the team's capabilities (collective efficacy). However, measures were not administered within 2 days before or after a competitive event, so as not to impact the results of the measures. Furthermore, the sport performance variable, win/loss percentage, was recorded for each team sport at the completion of each team's respective season.

## Instruments

### *General Questionnaire*

The general questionnaire was developed for use in the present study. This questionnaire was an eight-item self-report measure. This questionnaire utilized both fill-in- the-blank and checklist items. The first four items ask for general demographic information (i.e., age, gender, year in college, and ethnicity). The final four items ask for information about the athlete's specific sport including: type of sport, years on team, estimated playing time, and position.

### *Sport Measures*

*Group Environment Questionnaire* Widmeyer, Brawley, and Carron (1985) developed the Group Environment Questionnaire (GEQ), a 4-scale, self-report measure, measuring team cohesiveness. It is an 18-item questionnaire that uses a 9-point Likert-type scale anchored by 1 (*strongly disagree*) to 9 (*strongly agree*). The GEQ is derived from a conceptual model that views cohesion as a multidimensional construct that comprises both individual and group aspects (Spink, 1990). The four aspects of cohesiveness are Individual Attractions to Group-Social (ATG-S), Individual Attractions

to Group-Task (ATG-T), Group Integration-Social (GI-S), and Group Integration-Task (GI-T). In all cases, higher scores indicate perceptions of higher cohesiveness. The ATG-T and ATG-S subscales focus on the self, where the athlete indicates his/her personal attractions to both the team's task and social aspects. The GI-T and GI-S subscales have the individual assess the team as a whole. The focus on these two scales is on the team in terms of its coherence with regard to task and social activities (Paskevich et al., 1999). Original internal consistencies reported by Widmeyer and colleagues (1985) for the 4 subscales ranged from .64 to .76 (Kozub & McDonnell, 2000). The GEQ validity and internal consistency has been generally supported by subsequent research as well (Brawley, Carron, & Widmeyer, 1987; Paskevich et al., 1999). Norms for the GEQ were gathered using an assessment of team samples over a 3-year period (Widemeyer et al., 1985). Teams were sampled from municipal, university, industrial, and Olympic levels representing 23 different types of sports. The GEQ reports separate normative data for males and females and is one of the most widely accepted inventories in the field of sport psychology. Each subscale score was used in this research. The ATG-S and GI-T subscales' possible scores ranged from 5 to 45, while the ATG-T and GI-S subsales' possible scores ranged from 4 to 36. No total score is computed for the GEQ.

*Collective Efficacy Questionnaire for Sports* The Collective Efficacy Questionnaire for Sports (CEQS) is a 20-item self-report measure that uses a 10-point Likert scale anchored by 0 (*not at all confident*) to 9 (*extremely confident*). Each item begins with a stem asking the athlete to rate his/her team's confidence (e.g., "Rate your

team's confidence, in term's of the upcoming competition, that your team has the ability to…..outplay the opposing team").

The CEQS has demonstrated concurrent validity with respect to other group dynamics in sport and has been supported by confirmatory factor analysis. The CEQS items measure five different factors of collective efficacy (four items each): ability, effort, persistence, preparation, and unity. The total score on CEQS was used in the current research. The total score was chosen based on collective efficacy's overall impact and not the impact of each component of the construct. According to Short, Sullivan, and Feltz (2005), reliability coefficients ranged from .81 to .96 for each factor. All factors are moderately to fairly highly correlated with each other (i.e., $R$ = .59 to .95) and highly correlated with the CEQS total score. Short and colleagues utilized confirmatory factor analysis using 286 college-age student athletes for their validation sample. The CEQS scores from this validation sample were compared to the present study's sample CEQS scores. Scores on the CEQS range from 0 to 180.

*Coaching Competency Scale* The Coaching Competency Scale (CCS) is a 24-item self-report measure that uses a 10-point Likert scale anchored by 0 (*not at all competent*) to 9 (*extremely competent*). Each item begins with a stem asking the athlete about their perceptions of their coach's competence. The CCS identifies five dimensions of coaching competency. Myers, Feltz, Maier, Wolfe, and Reckase (2005) defined each of the five dimensions as: motivation competence (MC), game strategy competence (GSC), technique competence (TC), character building competence (CBC) and total coaching competence (TSC). For the current study, the CCS total score was used in the

analysis. The total CCS score was used in order to investigate the impact of the overall competency of each coach as perceived by the athletes. According to Myers and colleagues, motivation competence was defined as athletes' evaluations of their head coach's ability to affect the psychological mood and skills of athletes. Game strategy competence was defined as athletes' evaluations of their head coach's ability to lead during competition. Technique competence was defined as athletes' evaluation of their head coach's instructional and diagnostic abilities. Character building competence was defined as athletes' evaluation of their head coach's ability to influence the personal development and positive attitude toward sport in their athletes. The total score can be seen as the total coaching competence and has been defined as athletes' evaluations of their head coach's ability to affect the learning and performance of athletes. All dimensions were highly correlated with one another ranging from .79 to .97 (Myers et al.). Cronbach's alpha ranged from .82 to .92 across the subscales, which suggest very good-to-excellent internal consistency. The Myers and colleagues' sample was the reference sample for the CCS scores from the sample used in the present study. Possible total scores ranged from 0 to 216.

*Sport Performance Factor*

Win/loss percentage of each team was taken by dividing the number of wins for each team by the number of losses and multiplying by 100. This resulting number indicated the win/loss percentage for that team, which could be compared with each team. The possible range of scores include .000 (e.g., no wins) to 1.000 (no losses), with a winning season being any number above .500.

## Analyses

The first three research objectives (level of cohesion, level of collective efficacy, perceptions of leadership and coaching) were answered by using descriptive statistics to quantify each team's general level of cohesion using the GEQ, quantifying each team's responses to the CEQS and quantifying each team's responses to the CCS. The fourth research objective (relationship among and predictability of collective efficacy, cohesion, coaching and performance) was answered by analyzing correlations among the specific measures used. Data from all respondents was aggregated in order to complete these analyses, given that a team-by-team analysis may not provide enough statistical power for the current study. However, given that individual athletes are nested within different teams and this clustering of individual athlete data tends to promote within-team homogeneity, the use of hierarchical linear modeling was used for the analysis of this nested data (i.e., win/loss percentage). Multiple regression was used to investigate predictors of coaching competency, collective efficacy, and cohesion.

# CHAPTER IV

# RESULTS

Results are presented here for each of the four research questions posed for this study. However, before answering the research questions, descriptive statistics characterizing the subject sample in terms of sport, gender, age, ethnicity, class, years on team, playing time, and win/loss percentage are presented.

## Sport

There was a total sample size of 163 participants for this study representing 7 different sports. Of the 163 players, 47 (28.8%) participated in football, 12 (7.4%) participated in basketball, 17 (10.4%) participated in hockey, 28 (17.2) participated in soccer, 28 (17.2%) participated in rugby, 21 (12.9%) participated in softball, and 10 (6.1%) participated in lacrosse.

## Gender and Age

Ninety participants were male (55.2%) and 73 participants were female (44.8%). Age of the participants ranged from 18 to 28 years of age (Mean = 20.69, *SD* = 1.95), with the highest percentage (24.5%) reporting the age of 21 years. Approximately 91% ($n$ = 149) of the participants were between 18 and 23 years of age, with 9% ($n$ = 14) at 24 years or older.

## Ethnicity and Class

Of the 163 participants that were included in the study, 126 (77.3%) were Caucasian, 17 (10.4%) were African American, 8 (4.9%) were Latino/Hispanic, 6 (3.7%) were Pacific Islander, 3 (1.8%) were Asian American, 2 (1.2%) were of other ethnicity, and 1 (.6%) was Native American. Ninety-nine percent ($n$ = 161) of the sample were undergraduate students with 1% ($n$ = 2) reporting graduate student status. Of the 161 undergraduates, there were 39 (23.9%) freshmen, 49 (30.1%) sophomores, 36 (22.1%) juniors, and 37 (22.7%) seniors.

## Years on Team and Playing Time

Collegiate rules allow a maximum of 5 years of eligibility to participate on a collegiate sports team, with 1 year being used as a red shirt year (nonplaying member of a team). Of the 163 participants that were included in the study, 63 (38.7%) reported the current season as their first year with the team. Forty-three (26.4%) reported playing 2 years on the team, 28 (17.2%) reported playing 3 years, and 22 (13.5%) reported playing 3 years on their respective teams. Only 7 (4.3%) of the 163 players reported being with their teams for 5 years. Approximately 63% of the players ($n$ = 104) reported starting or playing more than 50% during each game. Approximately 25% ($n$ = 40) reported playing less than 50% during each game and 12% ($n$ = 19) reported playing very little during each game.

## Win/Loss Percentage

There was a total of eght teams representing seven different sports in the present study. Seven of the eight teams reported an overall winning percentage of less than .500, classifying these teams as having a losing season. Only one team had a winning percentage above .500. Table 5 reports the overall win/loss percentages for each team.

## Level of Cohesion

The first research question of this study was to characterize a population of Utah State University athletic teams in terms of level of cohesion. Research question 1 (What is the level of cohesion identified by each athletic team studied at the university) was answered through calculation of descriptive statistics to quantify each team's general level of cohesion, as measured by the GEQ. The following tables will report each GEQ category for males and females of each team sampled in this study. The final table in this section combines all male teams and female teams to report general overall means for each subscale.

Table 5

*Win/Loss Percentages for Each Team*

| Teams | Win/Loss Percentage |
|---|---|
| Football | .272 |
| Basketball | .107 |
| Hockey | .459 |
| Rugby – Male | .909 |
| Rugby – Female | .100 |
| Soccer | .350 |
| Softball | .173 |
| Lacrosse | .285 |

*Group Integration-Task*

Group integration-task (GI-T) refers to the perception of the closeness, similarity, and bonding within the group as a whole around the group's task (Widmeyer et al., 1985). Tables 6 and 7 present descriptive statistics of this subscale for each team. As may be seen in Table 6, male hockey and rugby teams reported higher mean scores for the GI-T subscale than the reference group, while the male football and lacrosse teams reported lower mean scores for the same subscale. As can be seen in Table 7, only the female soccer team reported a higher mean score (32.07) than the reference group for the GI-T. Female rugby, softball, and basketball all reported lower mean scores than the reference group.

*Group Integration-Social*

Group integration – social (GI-S) refers perception of the closeness, similarity, and bonding within the group as a whole around the group as a social unit (Widmeyer et

Table 6

*Descriptive Statistic for the GI-T Subscale of the GEQ by Male Team*

| Team | Mean | *SD* |
|---|---|---|
| Football | 28.33 | 5.78 |
| Hockey | 35.88 | 5.98 |
| Rugby | 31.94 | 7.07 |
| Lacrosse | 29.80 | 3.43 |

*Note.* Reference group mean (*SD*) = 30.82(*6.90*).

al., 1985). Tables 8 and 9 present descriptive statistics of this subscale for each team. As may be seen in Table 8, male hockey and rugby teams reported higher mean scores for the GI-S subscale than the reference group, while the male football and lacrosse teams

Table 7

*Descriptive Statistics for the GI-T Subscale of the GEQ by Female team*

| Team | Mean | *SD* |
|---|---|---|
| Rugby | 26.58 | 6.05 |
| Softball | 26.24 | 8.97 |
| Basketball | 30.08 | 6.16 |
| Soccer | 32.07 | 7.12 |

*Note.* Reference group mean (*SD*) = 31.93(6.96).

Table 8

*Descriptive Statistic for the GI-S Subscale of the GEQ by Male Team*

| Team | Mean | *SD* |
|---|---|---|
| Football | 23.15 | 4.44 |
| Hockey | 28.76 | 5.73 |
| Rugby | 25.94 | 4.34 |
| Lacrosse | 21.60 | 5.21 |

*Note.* Reference group mean (*SD*) = 23.63(6.41).

Table 9

*Descriptive Statistics for the GI-S Subscale of the GEQ by Female Team*

| Team | Mean | *SD* |
|---|---|---|
| Rugby | 23.92 | 7.90 |
| Softball | 22.00 | 7.71 |
| Basketball | 26.50 | 3.78 |
| Soccer | 27.57 | 4.44 |

*Note.* Reference group mean (*SD*) = 20.91(6.40).

reported lower mean scores on the same subscale. As can be seen in Table 9, all female teams reported a higher mean score than the reference group for the GI-S subscale.

*Individual Attraction to the Group-Task*

Individual attraction to the group-task (ATG-T) refers to the team member's feeling about his/her personal involvement with the group task, productivity, and goals and objectives (Widmeyer et al., 1985). Tables 10 and 11 present descriptive statistics of this subscale for each team. As may be seen in Table 10, male hockey, rugby, and lacrosse teams reported higher mean scores for the ATG-T subscale than the reference group, while the male football reported a lower mean score (25.61) than the reference group on the same subscale. As can be seen in Table 11, both the female rugby team and softball team reported a higher mean score than the reference group for the ATG-T subscale, while the basketball and soccer team reported lower mean score on the same subscale.

Table 10

*Descriptive Statistic for ATG-T*

*Subscale of the GEQ by Male Team*

| Team | Mean | *SD* |
|---|---|---|
| Football | 25.61 | 6.13 |
| Hockey | 30.35 | 3.57 |
| Rugby | 28.69 | 5.79 |
| Lacrosse | 28.10 | 3.84 |

*Note.* Reference group mean (*SD*) = 25.97(6.80).

Table 11

*Descriptive Statistics for ATG-T*

*Subscale of the GEQ by Female Team*

| Team | Mean | *SD* |
|---|---|---|
| Rugby | 27.92 | 6.44 |
| Softball | 26.77 | 7.40 |
| Basketball | 23.17 | 6.09 |
| Soccer | 24.96 | 6.86 |

*Note.* Reference group mean (*SD*) = 26.49(6.56).

*Individual Attraction to the Group-Social*

Individual attraction to the group-social (ATG-S) refers to the team member's feeling about his/her personal involvement acceptance, and social interaction with the group (Widmeyer et al., 1985). Tables 12 and 13 present descriptive statistics of this

subscale for each team. As may be seen in Table 12, all male sport teams reported higher mean scores for the ATG-S subscale than the reference group. As can be seen in Table 13, all female sport teams reported a higher mean score than the reference group for the ATG-S subscale.

Table 12

*Descriptive Statistic for ATG-S Subscale of the GEQ by Male Team*

| Team | Mean | *SD* |
|---|---|---|
| Football | 33.24 | 7.56 |
| Hockey | 36.88 | 7.76 |
| Rugby | 32.00 | 8.41 |
| Lacrosse | 32.60 | 4.45 |

*Note.* Reference group mean (*SD*) = 31.40(6.85).

Table 13

*Descriptive Statistics for ATG-S Subscale of the GEQ by Female Team*

| Team | Mean | *SD* |
|---|---|---|
| Rugby | 31.67 | 5.90 |
| Softball | 37.05 | 8.47 |
| Basketball | 36.00 | 5.36 |
| Soccer | 33.82 | 8.52 |

*Note.* Reference group mean (*SD*) = 31.10(6.82).

*Overall Team Statistics on GEQ*

The mean values for each subscale for all the teams by gender are presented in Table 14. Table 14 also contains the norm referenced sample means and standard deviations for the four subscales of the GEQ. Percentile ranks are also provided as part of the normative information. As may be seen in Table 14, in general the team means are higher on subscales measuring social aspects of team cohesion (e.g., AGT-S and GI-S) and lower on subscales measuring task-oriented aspects of team cohesion.

In order to further characterize these differences between team means and the reference sample, a standardized mean difference effect size using the normative mean

Table 14

*Descriptive Statistics for GEQ Subscales*

| GEQ subscale | Team mean (*SD*) | Normative mean (*SD*)[a] | Normative *N* | Effect size | Percentile ranks[b] |
|---|---|---|---|---|---|
| ATG-S | | | | | |
| Male | 33.64 (7.55) | 31.40 (6.85) | 381 | .33 | 63 |
| Female | 34.75 (7.78) | 31.10 (6.82) | 197 | .54 | 69 |
| ATG-T | | | | | |
| Male | 27.35 (5.70) | 25.97 (6.80) | 381 | .20 | 51 |
| Female | 25.67 (6.88) | 26.49 (6.56) | 197 | -.13 | 38 |
| GI-S | | | | | |
| Male | 24.55 (5.29) | 23.63 (6.41) | 381 | .14 | 57 |
| Female | 25.19 (6.43) | 20.91 (6.40) | 197 | .67 | 73 |
| GI-T | | | | | |
| Male | 30.58 (6.46) | 30.82 (6.90) | 381 | -.03 | 47 |
| Female | 29.16 (7.73) | 31.93 (6.96) | 197 | -.40 | 32 |

*Note.* ATG-S (Individual Attraction to the Group – Social), ATG-T (Individual Attraction to the Group- Task), GI-S (Group Integration – Social), GI-T (Group Integration- Task). Team $n$ = 90 Male, 73 Female.
[a]Normative sample consists of athletes representing 23 teams.
[b]Percentile ranks are compared to normative sample.

was calculated for each subscale. As may be seen in Table 14, effect sizes ranged from -.40 to .67. These effect sizes would be categorized as small-to-medium, with the largest effect sizes (.54 and .67) coming from female team means on social-oriented aspects of cohesion (ATG-S and GI-S). In summary, the present sample demonstrated lower perceived task cohesion for both males and females and higher perceived social cohesion for both males and females as compared to the normative sample.

## Level of Collective Efficacy

Research question 2 asked "What is the level of collective efficacy identified by each athletic team studied at the university?" Descriptive statistics were used to quantify each team's responses to the CESQ and results are presented in Table 15. Table 15 also contains the norm referenced sample mean and *SD* for the CESQ used by Short and colleagues (2005). As may be seen in Table 15, in general the team means are lower than the reference means, with the exception of hockey and the male rugby team. In order to further characterize these differences between team means and the reference sample, a standardized mean difference effect size was calculated for each team and the overall sample mean. As may be seen in Table 15, effect sizes ranged from -1.31 to .30. These effect sizes would be categorized as small-to-large, with the largest effect sizes (-1.02, -1.13, and -1.31) coming from the rugby female team, lacrosse team, and softball. The overall sample showed a general effect size of -.50 that would be categorized as a moderate effect size. In summary, the present sample demonstrated generally lower collective efficacy as compared to the reference sample of athletes.

Table 15

*Descriptive Statistics for the Total CESQ by Individual Team*

| Sport team | Mean | *SD* | *n* | Effect size |
|---|---|---|---|---|
| Football | 6.54 | 1.03 | 47 | -.48 |
| Basketball | 6.99 | .85 | 12 | -.11 |
| Hockey | 7.50 | .77 | 17 | .30 |
| Male Rugby | 7.37 | .64 | 16 | .19 |
| Female Rugby | 5.89 | 1.08 | 12 | -1.02 |
| Softball | 5.53 | 1.26 | 21 | -1.31 |
| Lacrosse | 5.74 | .97 | 10 | -1.13 |
| Soccer | 6.61 | 1.14 | 28 | -.43 |
| Total | 6.52 | .97 | 163 | -.50 |

*Note.* Reference Group mean (*SD*) = 7.13 (1.22). Reference Group *n* = 171.

## Perceptions of Coaching Competency

Research question 3 asked "What are the perceptions of coaching by each athletic team towards the coaching staff at the university?" Descriptive statistics were used to quantify each team's responses to the CCS. The mean values for each team are presented in Table 16. Also, the total mean for all sport teams used in this study was calculated. Table 16 also contains the sample mean and *SD* for the CCS used by Myers and colleagues (2005). As may be seen in Table 16, in general the team means are lower than the Myers and colleagues' reported means, with the exception of the football, the male rugby team, and the lacrosse team. In order to further characterize these differences between team means and the reference sample, a standardized mean difference effect size was calculated for each team and the overall sample mean. As may be seen in Table 16,

Table 16

*Descriptive Statistics for the Total CCS by Individual Team*

| Sport team | Mean | *SD* | *n* | Effect size |
|---|---|---|---|---|
| Football | 7.29 | 1.24 | 47 | .36 |
| Basketball | 5.30 | 1.28 | 12 | -.74 |
| Hockey | 5.76 | 1.41 | 17 | -.49 |
| Male Rugby | 7.42 | 1.41 | 16 | .43 |
| Female Rugby | 5.51 | 1.00 | 12 | -.62 |
| Softball | 6.29 | 1.83 | 21 | -.19 |
| Lacrosse | 6.98 | .79 | 10 | .19 |
| Soccer | 6.02 | 1.48 | 28 | -.34 |
| Total | 6.32 | 1.31 | 163 | -.18 |

*Note.* Reference Group Mean (*SD*) = 6.64 (1.81). Reference Group *n* = 590.

effect sizes ranged from -.74 to .43. These effect sizes would be categorized as small to medium, with the largest effect sizes (-.74 and -.62) coming from the basketball and female rugby team. The overall sample showed a general effect size of -.18, which would be categorized as a small effect size. In summary, the present sample demonstrated generally lower perceptions of their coach's competency to perform needed duties to help the team succeed as compared to the referenced group sample of athletes.

## Relationships Among Sport Factors and Overall Sport Performance

Research question 4 asked "What are the relationships among and predictability of collective efficacy, cohesion, coaching, and overall sport performance?" Correlations among individual athlete variables, cohesion, collective efficacy, and competency

measures, as well as through multi-level modeling and 6 regression analyses were used to answer this research question.

*Correlations Among Individual Athlete Variables*

A correlation matrix of the 5 individual athlete variables was generated. Table 17 contains the results of this analysis. As can be seen in Table 17, the correlations among the individual athlete variables range from -.31 to .71. There were four statistically significant correlations among the 10 possible combinations. Age was negatively related to gender, -.31, $p < .05$. These results indicated that males were more likely to be older than females. As can be expected, age was positively related to class (.59, $p < .05$) and years on team (.37, $p < .05$), which indicated that older athletes were more likely to be higher standing in class and have played more years on the team. Furthermore, class was positively related to years on the team (.71, $p < .05$), which indicated that athletes of

Table 17

*Pearson correlations Among Individual Athlete Variables*

| | Measure | | | | |
|---|---|---|---|---|---|
| Measure | 1 | 2 | 3 | 4 | 5 |
| 1. Gender | -- | -- | -- | -- | -- |
| 2. Age | -.312** | -- | -- | -- | -- |
| 3. Class | -.005 | .591** | -- | -- | -- |
| 4. Years on team | -.035 | .368** | .717** | -- | -- |
| 5. Playing Time | -.017 | -.025 | -.085 | -.113 | -- |

**$p \leq .01$ (two-tailed), $N = 163$.

higher class rank were more likely to have played more years on his/her respective sport team.

*Correlations Among Cohesion, Efficacy, and Competency Measures*

A correlation matrix was constructed for the six cohesion, efficacy, and competency measures including: CCS and CESQ total scores, the four dimension subscales for the GEQ, and win/loss percentage. Table 18 presents the correlations among the team factors and performance measures. Correlations ranged from -.07 to .55

Table 18

*Pearson Correlations Among Team Factors and Performance Measures*

| | Measure | | | | | | |
|---|---|---|---|---|---|---|---|
| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Total CESQ score | -- | -- | -- | -- | -- | -- | -- |
| Individual attraction to the group – Social (GEQ) | .14 | -- | -- | -- | -- | -- | -- |
| Individual attraction to the group – Task (GEQ) | .35** | .31** | -- | -- | -- | -- | -- |
| Group Integration – Social (GEQ) | .33** | .29** | .21** | -- | -- | -- | -- |
| Group Integration – Task (GEQ) | .55** | .15 | .42** | .43** | -- | -- | -- |
| CCS Total Score | .34** | .17* | .41** | .04 | .37** | -- | -- |
| Win/Loss percentage | .35** | -.07 | .15* | .17* | .24** | .20** | -- |

*$p \leq .05$ (two-tailed), $N = 163$. **$p \leq .01$ (two-tailed), $N = 163$.

and most correlations were statistically significant. Statistically significant correlations fell within the moderate range. Absolute correlations among the GEQ subscales ranged from .15 to .43. Most correlations between outcome variables were also statistically significant. Some of these correlations among outcome measures were expected and suggest a moderate degree of conceptual overlap among outcome measures. Collective efficacy, cohesion and coaching competency all incorporate aspects of the other within their design. One would expect a significant correlation among these factors.

*Correlations Between Individual Athlete Variables and Cohesion, Efficacy, and Competency Measures*

A correlation matrix among the five athlete variables and six sport performance variables was constructed to further illustrate the relationships between variables. Table 19 presents the correlations between the five athlete variables and six sport performance variables. Correlations ranged from -.35 ($p < .05$) to .40 ($p < .05$). Gender was positively related to total CESQ (.22) and negatively related to Total CCS (-.35). Thus, female athletes tended to have higher scores on the collective efficacy for sports questionnaire and tended to report lower coaching competency scale than male athletes. Playing time was positively correlated with the ATG-T and ATG-S subscales of the GEQ ($r = .40$ and .21, respectively), indicating that athletes reporting more playing time tended to have more individual attraction to the team in both task and social areas.

Table 19

*Correlations Between Individual Athlete Variables and Team Factors*

| Athlete variables | Outcome measures | | | | | |
|---|---|---|---|---|---|---|
| | GI-T | GIS | ATG-T | ATG-S | Total CESQ | Total CCS |
| Gender | .06 | -.09 | -.12 | .07 | .22** | -.35** |
| Age | -.04 | .02 | .02 | -.05 | .10 | .09 |
| Class | -.12 | .07 | -.02 | .09 | -.07 | .01 |
| Years on team | -.11 | .09 | .05 | .15 | .01 | -.01 |
| Playing time | .11 | .01 | .40** | .21** | .12 | .04 |

*$p \leq .05$ (two tail), $N = 163$. **$p \leq .01$ (two tail), $N = 163$.

*Predicting Sport Performance Using Athlete Variables and Team Factors*

One multi-level linear modeling analysis and 6 separate regression analyses were used to investigate predictors associated with each of the sport factors studied. The total *n* for all regression analyses was 163. To take into account the lack of statistical independence within teams concerning win/loss percentage, the first analyses consisted of hierarchical linear modeling. In this multi-level modeling, data can be analyzed at successive levels of hierarchically arranged data using linear regression to generate test level-specific parameters. To account for the fact that athletes are nested within teams, the intercept was allowed to vary at the level of the team. To detect possible differences in magnitude or nature of relations, separate analyses were conducted for each of the selected variables. Results of this analysis are presented in Table 20. As indicated in Table 20, five of the six variables predicted a statistically significant amount of variance

Table 20

*Hierarchial Linear Modeling Results of Win/loss Percentage on Collective Efficacy, Cohesion, and Perceptions of Coaching Competency*

| | Test of fixed effects | | |
|---|---|---|---|
| Fixed effect | df | F | *P* |
| Total CESQ | 155 | 8.568 | .000 |
| ATG-T | 155 | 1.391 | .213 |
| ATG-S | 155 | 2.402 | .023 |
| GI-T | 155 | 4.447 | .000 |
| GI-S | 155 | 4.660 | .000 |
| Coaching competency | 154 | 6.829 | .000 |
| | Estimate of fixed effects | | |
| Total CESQ | SE | df | *t* | Sig |
| Basketball | 8.33 | 155 | 2.652 | .009 |
| Hockey | 7.69 | 155 | 4.201 | .000 |
| Soccer | 7.04 | 155 | 2.071 | .040 |
| Male Rugby | 7.78 | 155 | 3.803 | 000 |
| GI-S | | | | |
| Hockey | 2.04 | 155 | 2.380 | .019 |
| GI-T | | | | |
| Hockey | 2.50 | 155 | 3.715 | .000 |
| Soccer | 2.29 | 155 | 2.396 | .018 |
| Male Rugby | 2.53 | 155 | 2.112 | .036 |
| Coaching competency | | | | |
| Football | 10.72 | 154 | 4.004 | .000 |
| Male Rugby | 12.63 | 154 | 3.647 | .000 |
| Lacrosse | 14.16 | 154 | 2.508 | .013 |

in the win/loss percentage. Examination of the *t* values for each team revealed statistically significant predictors of higher win/loss percentage based on each measure collected. Total CESQ, GI-T and Coaching Competency were predictors of high win/loss percentage by multiple teams.

The first regression analyses consisted of a simultaneous-entry multiple regression with the Total CESQ score serving as the dependent variable and the cohesion and competency measures servings as predictors. As may be seen in Table 21, the five-variable model predicted statistically significant amounts of variance on the Total CESQ score, $F = 16.409$, $p = .000$, $df = 161$, resulting in an *R*-square value of .345 and an

Table 21

*Simultaneous Entry Multiple Regression: Predicting Total CESQ (Collective Efficacy) Scores with Cohesion and Coaching Competency Variables as Predictors*

| Model summary | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ANOVA | | | | | |
| *R* | *R*-square | Adjusted *R*-square | Model | Sum of squares | *df* | Mean square | *F* | Sig. |
| .587 | .345 | .324 | Regression | 30539.57 | 5 | 6107.915 | 16.409 | .000 |
| | | | Residual | 58067.29 | 156 | 372.226 | | |
| | | | Total | 88606.86 | 161 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized coefficients | | Standardized coefficients | | |
| Variable | β | *SE* | β | *t* | Sig. |
| Total Coaching Competency | 9.588E-02 | .047 | .151 | 2.039 | .043 |
| ATG – Social | -6.324E-02 | .218 | -.021 | -.290 | .772 |
| ATG – Task | .377 | .287 | .101 | 1.315 | .191 |
| GI – Social | .563 | .304 | .140 | 1.853 | .066 |
| GI – Task | 1.307 | .267 | .394 | 4.904 | .000 |
| (constant) | 54.850 | 10.290 | | 5.330 | .000 |

adjusted *R*-square of .324. Thus, the five-variable model accounted for roughly 35% of the variance in the Total CESQ score. Examination of the *t* values revealed two statistically significant predictors: Total CCS, beta = .151 and GI-T, beta = .394. Thus, higher coaching competency and the GI-Task subtest of the cohesion measure were predictors of higher collective efficacy scores.

The results of a simultaneous-entry multiple regression predicting the Total

CCS score from the five-variable model is presented in Table 22. As may be seen in Table 22, the five-variable model predicted statistically significant amounts of variance on the Total CCS score, $F = 10.832$, $p = .000$, $df = 161$, resulting in an $R$-square value of .258 and an adjusted $R$-square of .234. Thus, the five-variable model accounted for roughly 26% of the variance in the Total CCS score. Examination of the $t$ values revealed four statistically significant predictors (Total CESQ score, beta = .171; GI-T, beta = .234; GI-S, beta = -.193; and ATG-T, beta = 265). Thus, efficacy, GI-T, ATG-T, and lower GI-S were predictors of higher coaching competency scores.

Table 22

*Simultaneous Entry Multiple Regression: Predicting Total Coaching Competency Scores with Efficacy and Cohesion Variables as Predictors*

| Model summary | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ANOVA | | | | | |
| *R* | *R*-square | Adjusted *R*-square | Model | Sum of squares | *df* | Mean square | *F* | Sig. |
| .508 | .258 | .234 | Regression | 56932.198 | 5 | 11386.44 | 10.832 | .000 |
| | | | Residual | 163979.78 | 156 | 1051.15 | | |
| | | | Total | 220911.98 | 161 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized coefficients | | Standardized coefficients | | |
| Variable | β | *SE* | β | *t* | Sig. |
| Total CESQ Score | .271 | .133 | .171 | 2.039 | .043 |
| ATG – Social | .410 | .364 | .085 | 1.125 | .262 |
| ATG – Task | 1.560 | .469 | .265 | 3.329 | .001 |
| GI – Social | -1.230 | .506 | -.193 | -2.429 | .016 |
| GI – Task | 1.224 | .471 | .234 | 2.597 | .010 |
| (constant) | 59.005 | 18.197 | | 3.243 | .001 |

The final four regression equations were used to investigate predictors of each individual category on the cohesion measure (GEQ). A simultaneous-entry multiple regression predicting ATG-S subscale score from the five-variable model is presented in Table 23. As may be seen in Table 23, the five-variable model predicted statistically significant amounts of variance on the ATG-S subscale of the GEQ, $F = 6.253$, $p = .000$, $df = 161$, resulting in an $R$-square value of .167 and an adjusted $R$-square of .140. Thus, the five-variable model accounted for roughly 17% of the variance in the ATG-S

Table 23

*Simultaneous Entry Multiple Regression: Predicting ATG-S Score with Efficacy, Competency, and Other Cohesion Variables as Predictors*

| Model summary | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ANOVA | | | | | |
| *R* | *R*-square | Adjusted *R*-square | Model | Sum of squares | *df* | Mean square | *F* | Sig. |
| .409 | .167 | .140 | Regression | 1573.428 | 5 | 314.686 | 6.263 | .000 |
| | | | Residual | 7850.306 | 156 | 50.322 | | |
| | | | Total | 9423.735 | 161 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized coefficients | | Standardized coefficients | | |
| Variable | β | *SE* | B | *t* | Sig. |
| Total Coaching Competency | 1.963E-02 | .017 | .095 | 1.125 | .262 |
| Total CESQ Score | -8.549E-03 | .029 | -.026 | -.290 | .772 |
| ATG – Task | .328 | .103 | .270 | 3.193 | .002 |
| GI – Social | .376 | .109 | .286 | 3.460 | .001 |
| GI – Task | -.108 | .105 | -.100 | -1.027 | .306 |
| (constant) | 17.349 | 3.872 | | 4.481 | .000 |

subscale score. Examination of the *t* values revealed two statistically significant predictors (GI-S, beta = .286; and ATG-T, beta = 270). Thus, higher ATG-T and GI-S subscale scores were predictors of higher ATG-S subscale scores on the GEQ. A simultaneous-entry multiple regression predicting ATG-T subscale score from the five-variable model is presented in Table 24. As may be seen in Table 24, the five-variable model predicted statistically significant amounts of variance on the ATG-T subscale of the GEQ, $F = 13.322$, $p = .000$, $df = 161$, resulting in an *R*-square value of .299 and an

Table 24

*Simultaneous Entry Multiple Regression: Predicting ATG-T Score with Efficacy, Competency, and Other Cohesion Variables as Predictors*

| Model summary | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ANOVA | | | | | |
| *R* | *R*-square | Adjusted *R*-square | Model | Sum of squares | *df* | Mean square | *F* | Sig. |
| .547 | .299 | .277 | Regression | 1908.771 | 5 | 381.754 | 13.322 | .000 |
| | | | Residual | 4470.340 | 156 | 28.656 | | |
| | | . | Total | 6379.111 | 161 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized coefficients | | Standardized Coefficients | | |
| Variable | β | *SE* | β | *t* | Sig. |
| Total Coaching Competency | 4.252E-02 | .013 | .250 | 3.329 | .001 |
| Total CESQ Score | 2.904E-02 | .022 | .108 | 1.315 | .191 |
| ATG – Social | .187 | .059 | .227 | 3.193 | .002 |
| GI – Social | -7.112E-03 | .085 | -.007 | -.084 | .934 |
| GI – Task | .197 | .078 | .222 | 2.535 | .012 |
| (constant) | 4.047 | 3.087 | | 1.311 | .192 |

adjusted *R*-square of .277. Thus, the five-variable model accounted for roughly 30% of the variance in the ATG-T subscale score. Examination of the *t* values revealed three statistically significant predictors (GI-T, beta = .222; ATG-S, beta = .227; and Total CCS, beta = .250). Thus, higher ATG-S, GI-T, and Total CCS scores were predictors of higher ATG-T subscale scores on the GEQ.

Another simultaneous-entry multiple regression predicting GI-S subscale scores from the five-variable model is presented in Table 25. As may be seen in Table 25, the

Table 25

*Simultaneous Entry Multiple Regression: Predicting GI-S Score with Efficacy, Competency, and Other Cohesion Variables as Predictors*

| Model summary | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ANOVA | | | | | |
| *R* | *R*-square | Adjusted *R*-square | Model | Sum of squares | *df* | Mean square | *F* | Sig. |
| .525 | .276 | .252 | Regression | 1502.639 | 5 | 300.528 | 11.865 | .000 |
| | | | Residual | 3951.188 | 156 | 25.328 | | |
| | | | Total | 5453.827 | 161 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized coefficients | | Standardized coefficients | | |
| Variable | β | *SE* | β | *t* | Sig. |
| Total Coaching Competency | -2.963E-02 | .012 | -.189 | -2.429 | .016 |
| Total CESQ Score | 3.828E-02 | .021 | .154 | 1.853 | .066 |
| ATG – Social | .189 | .055 | .249 | 3.460 | .001 |
| ATG – Task | -6.286E-03 | .075 | -.007 | -.084 | .934 |
| GI – Task | .310 | .070 | .377 | 4.397 | .000 |
| (constant) | 8.880 | 2.830 | | 3.137 | .002 |

five-variable model predicted statistically significant amounts of variance on the GI-S subscale of the GEQ, $F = 11.865$, $p = .000$, $df = 161$, resulting in an $R$-square value of .276 and an adjusted $R$-square of .252. Thus, the five-variable model accounted for roughly 28% of the variance in the GI-Social subscale score. Examination of the $t$ values revealed three statistically significant predictors (GI-T, beta = .377; ATG-S, beta = .249; and Total CCS, beta = -.189). Thus, higher GI-T and ATG-S, and lower Total CCS scores were predictors of higher GI-Social subscale scores on the GEQ. As may be seen in Table 26, the five-variable model predicted statistically significant amounts of variance on the GI-T subscale of the GEQ, $F = 24.206$, $p = .000$, $df = 161$ resulting in an $R$-square value of .437 and an adjusted $R$-square of .419. Thus, the five-variable model accounted for roughly 44% of the variance in the GI-T subscale score. Examination of the $t$ values revealed four statistically significant predictors (GI-S, beta = .293; ATG-T, beta = .178; Total CCS, beta = .177; and Total CESQ score, beta = .339). Thus, higher GI-S, ATG-T, Total CCS, and collective efficacy scores were predictors of higher GI-T subscale scores on the GEQ.

## Summary of Predictor Analyses

The multi-level modeling and five-variable sport factors' model predicted statistically significant amounts of variance in the efficacy, cohesion, and coaching competency measures. Importantly, coaching competency, total CESQ, and the task subscales of the GEQ consistently predicted higher scores on other sport measures. The social subscales did not consistently predict higher scores on other measures.

Table 26

*Simultaneous Entry Multiple Regression: Predicting GI-T Score with Efficacy, Competency and Other Cohesion Variables as Predictors*

| Model summary | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ANOVA | | | | | |
| *R* | *R*-square | Adjusted *R*-square | Model | Sum of squares | *df* | Mean square | *F* | Sig. |
| .661 | .437 | .419 | Regression | 3522.410 | 5 | 704.482 | 24.206 | .000 |
| | | | Residual | 4540.090 | 156 | 29.103 | | |
| | | | Total | 8062.500 | 161 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized Coefficients | | Standardized coefficients | | |
| Variable | β | *SE* | β | *t* | Sig. |
| Total Coaching Competency | 3.388E-02 | .013 | .177 | 2.597 | .010 |
| Total CESQ Score | .102 | .021 | .339 | 4.4904 | .000 |
| ATG – Social | -6.231E-02 | .061 | -.067 | -1.027 | .306 |
| ATG – Task | .200 | .079 | .178 | 2.535 | .012 |
| GI – Social | .356 | .081 | .293 | 4.397 | .000 |
| (constant) | -.749 | 3.128 | | -.239 | .811 |

# CHAPTER V

# DISCUSSION

## Summary

The four research questions of this study were to: (a) investigate the level of cohesion identified by each athletic team studied at the university, (b) investigate level of collective efficacy identified by each athletic team studied at the university, (c) investigate the perceptions of leadership or coaching competency by teams towards the coaching staff at the university, and (d) investigate the relationships among and predictability of collective efficacy, cohesion, coaching, and overall sport performance and determine the predictive efficacy of each sport factor upon the other. These four research questions were completed through surveying eight university teams in terms of collective efficacy, cohesion and perceptions of coaching competency. In-depth results for each objective were presented in the previous chapters. A summary of the major results for each research objective is presented here.

### *Research Question 1: Level of Cohesion*

In sport psychology literature, the use of GEQ is the most used instrument for measuring cohesion. Cohesion is broken down into four subscales, each one assessing a specific dimension of cohesion. Overall, female teams tended to score higher on social aspects of cohesion where men tended to score higher on more task-oriented levels of cohesion. This finding is similar to previous literature (e.g., Carron & Chelladurai, 1981; Carron et al., 1988).

*Group Integration-Task.* Overall, male teams at the university revealed perceptions of closeness and bonding surrounding a task similarly to the normative sample, while female teams at the university revealed significantly lower (effect size = -.40) perceptions of closeness and bonding surrounding sport specific tasks when compared to the normative sample.

On an individual team level, male athletes on football and lacrosse tended to view their closeness and bonding surrounding a task lower than that of rugby and hockey players, as well as the norm group. Female athletes on rugby, softball, and basketball tended to view their closeness and bonding surrounding a task lower than that of soccer players and the norm group. Overall, individual team member's feelings about the similarity, closeness, and bonding within the team as a whole around the team's task was lower than the norm group and suggestive of less task cohesion, which may impact the group's ability to "gel" or unite around a common goal. Furthermore, these teams were associated with lower winning percentage overall, which reinforces the cohesion-performance relationship seen in previous literature.

*Group Integration-Social.* Overall, male teams at the university revealed perceptions of closeness and bonding surrounding the group as a social unit slightly higher than the normative sample, while female teams at the university revealed significantly higher (effect size = .67) perceptions of closeness and bonding surrounding the team as a social unit when compared to the normative sample.

On an individual team level, male athletes on football, rugby, and hockey tended to view their closeness and bonding surrounding the team as a social unit higher than that

of lacrosse players, as well as the norm group. All female teams tended to view their closeness and bonding surrounding the team as a social unit higher than that of the norm group. Overall, individual team member's feelings about the similarity, closeness, and bonding within the team as a whole around the team as a social unit was higher than the norm group and suggestive of more social cohesion, which impacts the team's ability to unite. Research (Carron & Chelladurai, 1981) has shown that task cohesion is more closely related to better performance than social cohesion.

*Individual Attraction to the Group-Task.* Overall, male teams at the university revealed perceptions of personal involvement in the teams' tasks and goals higher than the normative sample, while female teams at the university revealed slightly lower perceptions of personal involvement in the teams' tasks and goals when compared to the normative sample.

On an individual team level, male athletes on rugby, hockey, and lacrosse tended to view their personal involvement in the team's tasks and goals higher than that of football players, as well as the norm group. Female athletes on rugby and softball tended to view their personal involvement in the team's tasks and goals higher than that of basketball and soccer athletes, as well as the norm group. Overall, individual team member's feelings about their personal involvement in the group's tasks and goals were different between males and females.

*Individual Attraction to the Group-Social.* Overall, male teams at the university revealed perceptions of personal involvement and interaction with the group moderately higher (effect size = .33) than the normative sample, while female teams at the university

revealed significantly higher (effect size = .54) perceptions of personal involvement and interaction with the group when compared to the normative sample.

On an individual team level, all male teams tended to view their personal involvement and interaction in the team higher than that of the norm group. Furthermore, all female teams tended to view their personal involvement and interaction in the team higher than the norm group. Overall, individual team member's feelings about their personal involvement and interaction in the team were higher than the norm group and suggestive of a more social cohesion dynamic, which may impact the team's ability to perform well in a task orient situation (e.g., competition).

*Research Question 2: Level of Collective Efficacy*

A measure assessing the athlete's perceptions of their team's overall ability to perform well in a competitive situation was used to evaluate collective efficacy. Overall, all teams reported significantly lower collective efficacy scores (effect size = -.50) than the validation sample. All but two teams (75%) reported lower collective efficacy scores than the validation sample, while male hockey and rugby teams both reported scores similar to the validation sample. It should be noted that the male hockey and rugby teams were the only teams to report a winning record or near winning record at the end of their respective seasons (.459 and .909, respectively). All other teams reported lower winning percentages (e.g., no other team had a winning season or a record above .400).

*Research Question 3: Perceptions of Coaching Competency*

Perceptions of coaching competency were measured by assessing each athlete's individual perceptions of competency of their team's respective coaches. Overall, all teams reported slightly lower perceptions of coaching competency when compared to the validation sample (effect size = -.13). Three of the eight teams reported positive effect sizes for coaching competency, with the highest positive effect size (.43) coming from the male rugby team. The highest negative effect size was reported by the basketball team (effect size = -.76) suggesting the lowest perceptions of coaching competency by the basketball team. The basketball team also recorded the second lowest winning percentage record at .107.

*Research Question 4: Relationship Among and Predictability of Sport Factors*

*Correlations.* Correlations among individual athlete variables were in expected directions and were small in magnitude. Most correlations among the cohesion, efficacy, and competency measures were also in expected directions and revealed conceptual overlap among the measures. When analyzing correlations between individual athlete variables and sport factors, four significant correlations were found. Females tended to have higher efficacy scores and lower perceptions of coaching competency than that of their male counterparts. Furthermore, athletes with more playing time tended to report a higher sense of personal involvement in the group as a whole and in group tasks than did athletes with less playing time.

*Multivariate predictors.* One multi-level model and six regression analyses were conducted in order to assess the relationships between the sport factors. Of the variables assessed, the GI-T dimension of the cohesion measure was predictive of higher scores on both collective efficacy and coaching competency. Collective efficacy, GI-T and Coaching competency were predictive of a higher win/loss percentage, while coaching competency was predictive of higher collective efficacy scores. Importantly, GI-S was only predictive of other cohesion dimensions, while ATG-S was only predictive of higher scores in other cohesion dimensions.

## Discussion

### *Cohesion*

The present study showed cohesion as a positive factor by most teams. The differences between social and task cohesion was an interesting finding that did emerge. Overall, there was a tendency for female teams studied at Utah State University to rate social aspects of cohesion higher than the male teams studied at the university as well as the normative sample. In terms of winning percentages, three of the four female teams also showed the lowest winning percentages in terms of performance. Male teams were not immune to ranking social aspects of cohesion high. In fact, in terms of individual attraction to the team, all male teams ranked social factors higher than the normative sample. Given the focus on social cohesion by both teams at the university and the paucity of research with teams focusing on social cohesion, it is unknown as to how this factor impacted team performance. However, given the fact that most teams studied had

unsuccessful seasons and that research (e.g., Boone et al., 1997) has shown that losing often negatively affects team cohesion, it is interesting to see the high level of cohesion reported by the teams at Utah State University. It could be questioned whether these teams were more attracted to the sports at the university for social purposes and were not as strongly affected by their unsuccessful records.

The only teams showing a high winning percentage (i.e., male rugby and hockey), showed the highest scores on both task-oriented subscales of the cohesion measure. These findings are consistent with the literature and represent a positive relationship between cohesion and performance. In this study the only cohesion factor that did not show a positive relationship with performance was one social cohesion subscale focusing on the individual's attraction to the team. For teams with higher winning percentages and still unsuccessful seasons (e.g., nonwinning season), the results showed similar findings with higher focus on task cohesion. For example, the female soccer teams showed the highest scores for task cohesion than the other female teams. It was this team that also had the better performance record than the other three teams. They were, in fact, the only female team to rank task cohesion higher than the normative group, with the other three female teams ranking task cohesion lower than the normative sample. Overall, even with the lower winning percentages shown by the teams used in this study, consistency with other research in terms of the cohesion-performance relationship can still be seen (e.g., Ball & Carron, 1976; Carron & Chelladurai, 1981; Carron et al., 2002). Cohesion appears to continue to be an important factor in sport performance.

This study investigated each of the cohesion's subscales when predicting performance and scores on other measures. When investigating performance, the group interaction task and social subscales and social cohesion subscale focusing on the individual's attraction to the team discussed above showed a positive relationship with with winning percentage. However, the group interaction subscales were the only cohesion subscales that showed statistically significant predictors on an individual team level. These findings suggest that there appears to be a positive relationship between some factors of cohesion and performance. This study also revealed one positive predictor of higher collective efficacy. In fact, one task cohesion subscale (GI-T) focusing on the team's ability to accomplish the task was predictive of higher overall collective efficacy. It was the only cohesion scale to predict higher scores on measures of collective efficacy and suggests that more task-oriented feelings of cohesion when focusing on the team contribute to a greater sense of collective efficacy. This finding was consistent with the finding from Kozub and McDonnell (2000), who found significant predictors on efficacy with the same task cohesion subscale (GI-T). Positive relationships similar to the finding in this study were also seen by Paskevich and colleagues (1999).

An interesting finding in this study was that both task cohesion subscales and the team social subscale were predictors of higher perceptions of coaching competency. Research has suggested that the coach has a significant impact on developing team cohesion (Turman, 2003; Wester & Weiss, 1991), so the findings in this study appear to be consistent with previous research. There were other expected findings in the study.

Many of the individual subscales of cohesion were positive predictors of higher scores on the other cohesion subscales. These were expected and are not surprising.

*Collective Efficacy*

The literature showed a positive relationship between collective efficacy and performance. The results of this study show a similar positive relationship with collective efficacy and performance. Overall, the teams with better records (e.g., male rugby, hockey) showed a positive effect size between performance and collective efficacy. However, the most important finding here was with unsuccessful teams. The teams with the lowest winning percentages (e.g., female rugby, softball) had the lowest scores on the collective efficacy measure, significantly lower than the normative group. Overall, all teams that had a losing record (e.g., 6 of the 8 teams studied) reported lower scores on a measure of collective efficacy than the normative group. Overall, all teams studied at the university collectively showed a lower sense of collective efficacy than the reference group.

Collective efficacy was seen as the highest predictor among the individual teams in the study of higher winning percentage. This finding is consistent with the only other study in the literature investigating collective efficacy as a predictor (Myers, Feltz et al., 2004). This finding suggests that collective efficacy may be as important in sport performance as other more established constructs (e.g., cohesion). These findings are consistent with the positive relationships shown by others. Furthermore, collective efficacy was shown to be a positive predictor of overall perceptions of coaching competency. This finding is consistent with the literature (e.g., Vargas-Tonsing et al.,

2003), suggesting that team beliefs about their capabilities to perform well are affected by beliefs about the coach's competency.

*Coaching Competency*

Coaching in sports is an evolving role that changes frequently. The perception by the players of their coach's ability to complete the job is not well understood in the sport world due to lack of research in the area. The present study revealed some conflicting results with some winning teams (e.g., hockey) reporting lower perceptions of coaching competency, and some losing teams (e.g., football) reporting significantly higher scores on coaching competency. It is difficult to understand these discrepancies. However, it may be that the small sample sizes on each team contributed to the higher scores. Overall, all teams collectively reported lower scores on the measures of coaching competency than the reference groups.

When looking at the predictive power of the coaching competency measure, it was found to be predictive of higher collective efficacy scores, suggesting that athletes' individual perceptions of their coaches may be considered when evaluating their team's ability to perform. Given collective efficacy as a predictor of sport performance, these findings are important in assessing how important individual athlete's perceptions of coaching competency affect their beliefs about their teams' overall capabilities to perform, which in turn impact their performance.

*Summary*

Overall, findings from this study were consistent with many findings in the research. However, the impact of collective efficacy and its relationship on cohesion, coaching competency, and win/loss performance was an interesting finding and one that has not been seen in previous research. This study began to explore these relationships that have not been taken together in previous research. The findings reveal the importance of each factor on sport performance and how these factors impact each other.

## Implications

There are a number of implications that may be drawn from the results of this study and would hold interest for athletic coaches and sport psychology researchers. With regard to athletic coaches, many of these findings echo previous experience and knowledge gained from working with athletes. In research, these findings are important because they begin the process of integrating each of these sport factors and assessing how they each interrelate and impact the other.

*Implications for Athletic Coaches*

One implication from this study that is most salient to athletic coaches is that sport performance continues to have many factors that affect the overall ability of a team to compete and perform successfully at a task. It is not only understood that each individual on the team be capable of performing well at the sport, but that the entire team have an overall sense of efficacy when it comes to the task at hand. This efficacy is not only strengthened by winning, but by how the athlete relates to the team and how the

team unites into a cohesive unit, with just the right amount of task specific cohesion and not too much social cohesion. Furthermore, the coach's responsibility of exhibiting his/her competency to the team is highly important if successful performance is to be achieved.

Another implication is that coaches should remain cognizant of the larger finding, namely, that trying to focus on one factor may impact the overall success of the team, because of how each of these factors are interrelated and contribute to the overall successfulness or unsuccessfulness of the team.

*Implications for Sport Psychology Researchers*

The sport psychology community is likely to hold interest in results beyond how specific factors contributed to performance because of the number of other factors combined that impact performance. One implication from this study is that these factors were significantly interrelated with each other. It is important to realize that factors such as collective efficacy are not only predictive of performance but that they are predictive of higher task cohesion scores and perceptions of coaching competency. These findings suggest that while the sport psychology world attempts to define many factors that can contribute to performance, many of the factors devised are inherently similar to each other and do not contain theoretical differences. Investigating the similarities between these factors will help explain the relationships between such factors as cohesion, efficacy, and coaching competency.

Another implication from this study is that it is the first of its kind to attempt to understand the relationship between cohesion, efficacy, and coaching competency.

Furthermore, it was the first study to use the CESQ and CCS as measures and compare them both to cohesion and performance. This study can be seen as an exploratory attempt to investigate these relationships. Researchers may use this information to further develop these measures as well as begin to find the importance these factors all contribute to successful or unsuccessful sport teams.

## Limitations

The major limitation of the present study was the relatively small sample size used for the data analysis, especially when investigating win/loss performance. The 163 athletes used in this study satisfied the conditions needed for appropriate statistical analyses for the predictor variables in the regression equations. However, when broken down into individual teams, the sample size decreased considerably. The use of hierarchical linear modeling helped reduce statistical issues surrounding the small sample size. Another major limitation of the study is that it is often difficult to determine how well the results of any one investigation might generalize to broader populations of sport teams. This important threat to external validity was complicated by the fact that only sport teams from one university in Utah were gathered, which potentially limits the generalizability of results to other teams and universities in other states. However, the present study utilized multiple teams from different sports, which provided a variability that may have improved overall reporting of the different sport factors studied. Previous research has typically focused on one or two teams and not taken into account different

team dynamics that may ultimately influence cohesion, collective efficacy and perceptions of coaching competency.

Another limitation was the use of two relatively new instruments to measure collective efficacy and perceptions of coaching competency. These measures have not been well established in the sport psychology literature and this study's ability to generalize its findings are constrained by the measures that were used. The multi-directionality of the correlations among the sport factors in the present study can also be seen as a limitation. The similarities among these factors often make it difficult to separate each factors importance and each factors impact on the other. There appeared to be some circular reasoning with some factors that make it difficult to completely understand the current factors impact. However, this limitation is also the main argument in the present study and continued research using multiple factors is necessary to understand all the factors that contribute to successful and unsuccessful teams.

## Recommendations

The most common variable used in sport psychology literature is cohesion. Because of this emphasis, the field of sport psychology has an adequate understanding of the relationship between sport performance and cohesion. The current study extends the research community's understanding of cohesion by incorporating two relatively new factors in sport psychology and investigating their relationships to cohesion and sport performance. As with any new research, results from this study should be viewed

tentatively. However, a number of salient results form the basis of future research questions.

Among the most interesting of the results was the predictive power of collective efficacy on performance, coaching competency, and task cohesion. One way to improve upon the current findings is to update the comparison group by collecting a large, geographically diverse sample of collegiate athletes using these new measures. This would allow for more controlled and valid comparisons across teams in collegiate sports.

In the current sample, there were exceedingly higher scores on cohesion subscales (especially social cohesion scales) than in the literature. Were these differences due simply to the university studied, the types of sports used, or successfulness of the team? Given the fact the majority of the teams studied at the university were unsuccessful teams for their season, the data is consistent with more emphasis on social cohesion and not task cohesion. However, future research using more equally distributed teams with both winning and losing records will be helpful in determining the impact that social cohesion plays on team performance.

## Conclusion

The present study revealed many relationships among cohesion, collective efficacy, and perceptions of coaching competency that have effects on overall sport performance. These findings show the importance that each of these factors have on successful and unsuccessful teams. The relationships among each of these factors are constantly affecting each other and frequently change depending on the performance of

the athletes, the entire team, and the coach. Furthermore, the sport factors investigated in the present study are important factors outside of sports and can be seen from business environments to the military. Cohesive unit, teams, or organizations that believe they have the capability to perform well in their task and view their leader, boss, or commander as a competent individual may in fact become more successful. However, understanding that each of these factors are not unique in and of themselves, but are highly interrelated, may ultimately help provide insight and guidance on how to make each of these organizations more successful.

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# APPENDIXES

Appendix A:

Coaches' Letter and Informed Consent

Dear Coach _____,

My name is Clayton Manning and I am graduate student in the psychology department at Utah State University. I am currently working on my doctoral dissertation. My topic is the relationship between coaching, team cohesion, team collective efficacy, and their impact on sport performance in collegiate athletes.

Currently, little research focusing on a variety of teams investigating these three factors and their impact on performance has been published in the literature. I would like to measure the perceived coaching competence of collegiate athletes as well as their perceived collective efficacy and cohesion. I am using a sample of scholarship and club sport teams on the Utah State University campus.

I am writing to see if you might allow us to survey members of your teams as subjects in this study. If you and your team are willing to participate, myself or a research assistant will come to a team meeting at least half way through your season. The administration of the surveys will take approximately 30 minutes. In exchange for your time, I will send each coach a report that includes summary statistics for their team in relation to the entire sample.

If you are will to set aside some time at a team meeting for this activity, please respond (via email or telephone) at your earliest convenience. If you would like more information about the study before deciding, feel free to contact myself or the chair of my dissertation committee, Rich Gordin, Ed.D. Thanks for your time and consideration.

Sincerely,

Clayton Manning, M.S.
Utah State University
ManningCTM@aol.com
(435) 797-1986

Rich Gordin, Ed.D.
Utah State University
gordin@cc.usu.edu
(435) 797-1506

# Informed Consent

| | |
|---|---|
| Purpose | This questionnaire is part of an ongoing research project conducted by Rich Gordin, Ed.D, and Ph.D. candidate, Clayton Manning, M.S., of Utah State University. This research project is investigating collegiate athletes' perceptions of team collective efficacy, team cohesion, and coaching competence. Approximately 10 teams from a variety of sports on this campus will be participating in the study. |
| Procedure | The questionnaire should take no longer than 30 minutes to complete. The findings of this study will be used solely for academic purposes. The administrator of the questionnaire will then collect your responses. No coach or athletic administrator will have access to your individual responses. However, the collective findings will be available to any coach or player who is interested in the results. |
| Voluntary | Participation in this study is entirely voluntary; you may withdraw at anytime without consequence. If you feel that you would rather not provide the requested information, you may leave that item blank or discontinue altogether. |
| Confidential | This survey is completely confidential, so please feel free to respond to the questions as honestly as possible. This form will be signed and turned in separately from your answers. You are not to write your name on the actual survey or answer sheet. This way you name will not be known to the researcher. Only the two investigators listed at the bottom of the next page will have access to the individual questionnaires. Research records will be kept confidential consisted with federal and state regulations. Once the surveys have been analyzed, all forms will be kept in a locked file in a locked office on the Utah State University Campus. After the new year, all the original forms will be destroyed. |
| Risks | There are no foreseeable risks in participating in this research study. |
| Benefits | This study hopes to benefit collegiate coaches and athletes by explaining how such factors as coaching competence, team cohesion, and collective efficacy impact the sport performance of a team during the season. |
| IRB Approval | The Institutional Review Board (IRB) for the protection of human subjects at Utah State University has reviewed and approved this research project. |

We certify that the research study has been explained to the individual, by me or my research staff, and that the individual understands the nature and purpose, the possible risks and benefits associated with taking part in this research study. Any questions that have been raised have been answered.

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Your questionnaire administrator has explained the study to you and answered your questions. If you have any other questions, feel free to contact us at the numbers listed above. You have been given two copies of this consent form. Please sign both copies and retain one for your files. By signing below, you agree that you understand your rights as a subject and freely choose to participate in the study.

Signature _____ Date _____

Appendix B:

Administrator's Script and Self-Report Questionnaires

Please follow the script closely to insure that athletes taking the questionnaire at different sites receive the same instructions. You are to read all the words in the quotations aloud to the athletes. Additional instructions are given to you in parentheses.

**(If you are unfamiliar to the athletes, please read the one line introduction. If you are familiar to them, please begin the administration on the second line)**

"Hello team, my name is _____**(name)** and I am _____**(title)**"
"I am here today to administer a few questionnaires dealing with team collective efficacy, cohesion and coaching. Your participation is completely voluntary and your responses will be kept confidential as detailed in this consent form." **(Hold up a copy of the 'Informed Consent' form)** "I will pass out the signed consent form now. Please take two copies each" **(begin distributing the 'Informed Consent' forms, 2 copies per player)** "You are too keep one copy of the consent form for your information. Please read the form carefully so you are aware of the nature of the questionnaire and your rights as a subject in this research project. If you have any questions, please raise your hand. When you have read the form, please sign and dater one copy as indicated at the bottom of the form and I will collect them." **(Pause a few moments, then collect the signed forms)**

"Next, I will pass out the questionnaire." **(...as you distribute the questionnaires, continue to read...)** "Please write directly on these pages. Does anyone need a pen or pencil? **(...pass a pen or pencil to anyone who needs one...)** The items on one of the questionnaires will ask you to rate your coach. I realize that some teams generally have a staff of several coaches. Please select the one coach that you work most closely with. Please respond to <u>all</u> the items with that coach in mind. When you have finished the questionnaires, please bring it forward to me. Are there any questions?" **(Do you best at answering any questions.)** "If there are no (other) questions, then go ahead and begin."

**(When approximately half or two-thirds of the team has finished, <u>BEFORE</u> any athletes leave the room, please read the following 'debriefing' comments.)** "Let me interrupt those of you who are still working just to make a few final remarks. First, on behalf of the graduate student conducting this project, I would like to thank you for your participation. If you are interested in learning more about the purpose of the study, or in learning how the results come out, feel free to contact Clayton Manning, whose phone number and e-mail address are given on the consent form."
**(Allow the athletes ample time to finish the questionnaires, then collect all remaining materials and return them to the box for shipping.)**

Demographic Questionnaire

1. Gender: Male Female

2. Age: 18 19 20 21 22 23 24 25 26 Other_____

3. Class: Freshman Sophomore Junior Senior Graduate Student

4. Ethnicity: Caucasian (White) African-American Latino/Hispanic

Asian-American Pacific Islander Native American Other_____

5. What sport are you currently participating in (Circle one for the sport which you are completing this questionnaire)

Football Basketball Volleyball Hockey Soccer Rugby Gymnastics

6. How many years have you been on the team (include any red shirt season)?
This is my: 1st year 2nd year 3rd year 4th year 5th year

7. About how much playing time are you receiving this year?
I start or play 50% or more of the time
I play less than 50% of the time
I play very little, only when the outcome is no longer in question

8. What is your current position on the team? _____

## Collective Efficacy for Sports Questionnaire

Instructions: Team confidence refers 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 your upcoming competition

**Rate your team's confidence, in terms of the upcoming competition, that your team has the ability to…**

| | Not at all Confident | | | | | | | | Extremely Confident |
|---|---|---|---|---|---|---|---|---|---|
| 1. Outplay the opposing team | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2. Resolve conflicts | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 3. Perform under pressure | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4. Be ready | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 5. Show more ability than other team | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 6. Be united | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 7. Persist when obstacles are present | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 8. Demonstrate a strong work ethic | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 9. Stay in the game when it seems like your team isn't getting any breaks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10. Play to its capabilities | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 11. Play well without your best player | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 12. Mentally prepare for this competition | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 13. Keep a positive attitude | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 14. Play more skillfully than the opponent | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 15. Perform better than the opposing team(s) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 16. Show enthusiasm | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 17. Overcome distractions | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 18. Physically prepare for this competition | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 19. Devise a successful strategy | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 20. Maintain effective communication | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

## Group Environment Questionnaire

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

| | Strongly Disagree | | | | | | | | Strongly Agree |
|---|---|---|---|---|---|---|---|---|---|
| 1. I do not enjoy being a part of the social activities of this team | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2. I'm not happy with the amount of playing time I get | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 3. I am not going to miss the members of this team when the season ends | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4. I'm unhappy with my team's level of desire to win | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 5. Some of my best friends are on this team | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 6. This team does not give me enough opportunities to improve my personal performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 7. I enjoy other parties more than team parties | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 8. I do not like the style of play on this team | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 9. For me this team is one of the most important social groups to which I belong | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10. Our team is united in trying to reach its goals for performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 11. Members of our team would rather go out on their own that get together as a team | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 12. We all take responsibility for any loss or poor performance by out team | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 13. Our team members rarely party together | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 14. Out team members have conflicting aspirations for the team's performance | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 15. Out team would like to spend time together in the off season | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 16. If members of our team have problems in practice, everyone wants to help them so we can get back together again | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 17. Members of our team do not stick together outside of practices and games | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 18. Our team members do not communicate freely about each athlete's responsibilities during competition or practice | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

## Coaching Competency Scale

Instructions: The following questions are designed to assess **your feelings** about **YOUR COACH**. Please CIRCLE a number from 0 to 9 to indicate your perception of your coach's competency with each of the questions

| **How competent is your head coach in his or her ability to...** | **Not at all Competent** | | | | | | | | | **Extremely Competent** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. help athletes maintain confidence in themselves? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 2. recognize opposing team's strengths during competition? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 3. mentally prepare his/her athletes for game strategies? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4. understand competitive strategies? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 5. instill an attitude of good moral character? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 6. build the self-esteem of his/her athletes? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 7. demonstrate the skills of his/her sport? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 8. adapt to different game situations? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 9. recognize opposing team's weakness during competition? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10. motivate his/her athletes? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 11. make critical decisions during competition? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 12. build team cohesion? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 13. instill an attitude of fair play among his/her athletes? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 14. coach individual athletes on technique? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 15. build the self-confidence of his/her athletes? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 16. develop athletes' abilities? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 17. maximize his/her team's strengths during competition? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 18. recognize talent in athletes? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 19. promote good sportsmanship? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 20. detect skill errors? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 21. adjust his/her game strategy to fit his/her team's talent? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 22. teach the skills of his/her sport? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 23. build team confidence? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 24. instill an attitude of respect for others? | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

VITA

**CPT Clayton Todd Manning, M.S.**
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**Education**

| | |
|---|---|
| Ph.D. Candidate | **Psychology,** 2007 (anticipated)<br>Utah State University, Combined Clinical/Counseling Program, Logan, Utah<br>Accredited by the American Psychological Association<br>Dissertation: *Relationship among team collective efficacy, cohesion, and coaching competency in sports* |
| Master of Science | **Counseling Psychology**, December 2004<br>Utah State University, Combined Clinical/Counseling Program, Logan, Utah<br>Thesis: *Predictors of outcome of surgery for carpal tunnel syndrome* |
| Bachelor of Science | **Psychology,** May 2001<br>University of the Ozarks, Clarksville, Arkansas |

## Clinical Experience

**APA Accredited Internship**

| | |
|---|---|
| Oct 2006-Oct 2007 | Clinical Psychology Resident,<br>**Department of Behavioral Medicine**<br>**Brooke Army Medical Center**<br>Director of Training: MAJ Ingrid Lim, Psy.D. |

Oct 2006-Oct 2007 Clinical Psychology Resident
**Warrior and Family Behavior Medicine Service**
Supervisors: Estella Miranda, M.D., Alan Maiers, Psy.D., Buddy Cardwell, Psy. D., MAJ Ingrid Lim, Psy.D.

- Conducted individual counseling of soldier's with a focus on returning OIF/OEF soldiers
- Focus on treatments for PTSD
- Focus on CDMHE, recruiter and sniper evaluations, and MSE

Oct 2006-Jan 2007 Clinical Psychology Resident
**Community Behavioral Health Service**
Supervisor: Jason Campbell, Psy.D.

- Conducted individual counseling of soldier's with a focus on a AIT population

Jan 2007-Apr 2007 Clinical Psychology Resident
**Neuropsychology Service**
Supervisor: Doug Cooper, Ph.D.

- Administered neuropsychological screenings and full evaluations
- Gained experience in integrative report writing

Apr 2007-July 2007 Clinical Psychology Resident
**Child and Adolescent Psychology Service**
Supervisor: Teresa Arata-Maiers, Psy.D.

- Conducted individual and family therapy for children.
- Administered psycho-educational assessments
- Worked with a multidisciplinary team
- Gained experience in integrative report writing
- Clinical Hours: Total Hours –
  Direct Service –

Aug 2007-Oct 2007 Clinical Psychology Resident
**Behavioral Health Service**
Supervisor: Sherry Hess, Ph.D.

- Conducted individual therapy with clients with chronic illness (e.g., Diabetes, Asthma, Chronic Pain, Fibromyalgia)
- Conducted a Stress Management group for Diabetes Patients
- Co-led CBT psychoeducational group for Depression
- Co-facilitated psychoeducational group for Fibromyalgia

**Practica Training**

Aug 2004-Aug 2005 — Student Therapist, Clinical Practicum
**Psychology Community Clinic**
Utah State University
Supervisor: Susan L. Crowley, Ph.D.
- Conducted individual and couple/marital counseling of adult clients
- Administered psychological assessments
- Clinical Hours: Total Hours – 390
  Direct Service – 104

Aug 2003-May 2004 — Student Therapist, Counseling Practicum
**Counseling Center**
Utah State University
Supervisors: Mark Nafziger, Ph.D, Dan Barnes, M.S. & Esther Saville, M.S.
- Conducted individual counseling of adult clients with a focus on college student clientele
- Clinical Hours: Total Hours – 288
  Direct Service – 80.00

May 2003-Aug 2003 — Student Therapist, Clinical Practicum
**Psychology Community Clinic**
Utah State University
Supervisor: Susan L. Crowley, Ph.D.
- Conducted individual counseling of adult clients and child clients including parent training
- Clinical Hours: Total Hours – 126
  Direct Service – 36

Aug 2002-May 2003 — Student Therapist, School/Child Practicum
**Center for Persons with Disabilities**
Utah State University
Supervisor: Pat Truhn, Ph.D.
- Acted as case coordinator for clients receiving services
- Administered psycho-educational assessments
- Worked with a multidisciplinary team
- Gained experience in integrative report writing
- Clinical Hours: Total Hours – 359
  Direct Service – 61

Jan 2002-Aug 2002 — Student Therapist, Counseling Practicum
**Psychology Community Clinic**
Utah State University
Supervisor: Susan L. Crowley, Ph.D.

- Conducted individual counseling of adult clients
- Conducted couple/marital counseling
- Clinical Hours: Total Hours –248
  Direct Service – 36

Jan 2001-May 2001 — Clinical Experience Trainee, **Counseling Associates, Inc.**
Clarksville, Arkansas
Supervisor: Tom R. Stephenson, Ph.D.

- Learned marriage and family counseling skills
- Worked with chronically mentally ill
- Clinical Hours: Total Hours – 111
  Direct Service – 11

Aug 2000-Dec 2000 — Clinical Experience Trainee, **Cass Job Corps Center**
Cass, Arkansas
Supervisor: Tom R. Stephenson, Ph.D.

- Conducted relaxation training and anger management sessions with adolescent groups
- Conducted individual sessions with job corps members, focusing on anger management and relaxation training
- Clinical Hours: Total Hours – 122
  Direct Service – 16

Jan 2000-May 2000 — Director, **Behavior Management Clinic**
University of the Ozarks
Supervisor: Tom R. Stephenson, Ph.D.

- Conducted relaxation training and utilized biofeedback with children and adults
- Trained assistant in administration and relaxation training
- Performed administrative duties (filing, progress notes, contacts)
- Clinical Hours: Total Hours – 167
  Direct Service – 10

## Clinical Work Experience

July 2003-May 2006 — Clinical Services Intern, **Center for Persons with Disabilities**
Utah State University
Supervisor: Pat Truhn, Ph.D.

- Acted as case coordinator for clients receiving services
- Administered psycho-educational assessments
- Worked with a multidisciplinary team
- Clinical Hours: Total Hours – 1220
  Direct Service – 263

June 2003-Aug 2003 — Clinic Assistant, **Psychology Community Clinic**
Utah State University

- Maintained clinic operation
- Served as initial contact person for clients seeking services
- Performed administrative duties as assistant to clinic director
- Helped revise current clinic manual
- Managed all psychology tests including cataloging of new tests

## Additional Clinical Experience

Aug 2002-May 2003 — Student Therapist, **Psychology Community Clinic**
Utah State University
Supervisor: Susan L. Crowley, Ph.D.

- Conducted individual counseling of on-going, adult cases from practicum
- Clinical Hours: Total Hours - 65
  Direct Service – 27

Feb 2004-Apr 2004 — Psycho-educational Group Leader, **Fibromyalgia Group Intervention**
Utah State University

- Co-led group for persons suffering from fibromyalgia
- Clinical Hours: Total Hours - 28.00
  Direct Service – 16

## Research Experience

Jan 2005 to current — **Doctoral Dissertation** (in progress)
*Relationship among team collective efficacy, cohesion, and coaching competency in sports*
Investigated multiple sport teams' (e.g., basketball, soccer, football, rugby) expectations of their team's ability, their perception of their coach's competency, and team cohesion one performance
Chairperson: Rich Gordin, Ed.D
Proposal Defense: September 2005
Final Defense: October 2007

May 2002-Dec 2004 — **Master's Thesis**
*Predictors of outcome of surgery for carpal tunnel syndrome*
Investigated biopsychosocial predictors of good or poor outcome of surgery for Utah workers' compensation patients with carpal tunnel syndrome
Chairperson: Scott DeBerard, Ph.D.

## Professional Presentations

Manning, C.T. (2005, April). *Psychosocial predictors of outcome of surgery for carpal tunnel syndrome in Utah workers' compensation patients.* Poster presentation at the annual meeting of the Society of Behavioral Medicine. Boston, MA.

Manning, C.T. (2001, April). *The effects of delayed communication on performance in crisis problem-solving situations during social isolation.* Paper presented at the ninth annual meeting of the Arkansas Space Grant Symposium. Searcy, AR.

Manning, C.T. (2001, January). *The effects of delayed communication on performance in crisis problem-solving situations during social isolation.* Paper presented at the fourth annual meeting of the American Association of Behavioral and Social Sciences. Las Vegas, NV.

## Grants funded

Principal Investigator
January 2000-May 2001

Arkansas Space Grant Consortium (NASA affiliated)
Grant #: UOZ10031 ($10,000)
The effects of delayed communication on performance in crisis problem-solving situations during social isolation

## Teaching Experience

Jan 2003-May 2003 — Graduate Teaching Assistant, **Educational Psychology**
Utah State University
Supervisor: Eric Gee, Ph.D.
- Lab Instructor; Prepared lessons and activities for four labs per week; graded papers, prepared quizzes; led and facilitated discussions

Aug 2002-Dec 2002 — Graduate Teaching Assistant, **Educational Psychology**
Utah State University
Supervisor: Steve Lehman, Ph.D.
- Lab Instructor; Prepared lessons and activities for four labs per week; graded papers, prepared quizzes; led and facilitated discussions

Jan 2002-May 2002 — Graduate Teaching Assistant, **Educational Psychology**
Utah State University
Supervisor: Pablo Chavajay, Ph.D.
- Lab Instructor; Prepared lessons and activities for five labs per week; graded papers; prepared quizzes; led discussions

Jan 2002-May 2002 — Graduate Teaching Assistant, **Cognitive Psychology**
Utah State University
Supervisor: Steve Lehman, Ph.D.
- Lab Instructor; Graded papers and homework; led discussions.

Aug 2001-May 2002 — Undergraduate Advisor, **Psychology Cooperative Work Experience and Practicum,** Utah State University
- Advised undergraduates on work experience placement; Handled all administrative duties including grading and organizing of proper documents

Aug 2001-Dec 2001 — Graduate Teaching Assistant, **Educational Psychology**
Utah State University
Supervisor: Steve Lehman, Ph.D.
- Lab Instructor; Prepared lessons and activities for four labs per week; graded papers; prepared quizzes; led discussions

## Awards and Honors

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|---|---|
| Army Health Professions Scholarship Program | 2005-2007 |
| Dean's List (USU School of Graduate Studies) | 2001-2004 |
| Hurie Award (Outstanding Undergraduate Senior) | 2001 |
| Alpha Chi (National Honor Society) | 2001 |
| Psychology Scholar Award "Psych Light" | 2000 |
| National Dean's List | 2000-2001 |
| Dean's List | 1997-2001 |
| Dean's Scholarship | 1997-2001 |

## Professional Service

Aug 2005-May 2006 — Graduate Student Co-Chair for the Consortium of Combined and Integrated Doctoral Programs in Psychology (CCIDPIP)

- Stood as co-chair for all graduate student representatives of CCIDPIP
- Represented Utah State University on national training counsel
- Help coordinate Annual CCIDPIP meeting at national conference

Aug 2004-May2005 — Graduate Student representative for the Consortium of Combined and Integrated Doctoral Programs in Psychology (CCIDPIP)

- Represented Utah State University on national training counsel
- Helped assess combined student needs.
- Helped provide a combined student voice to APA

Aug 2002-May 2004 — Combined Clinical/Counseling/School Psychology Program Student Representative

- Representative for students in the department
- Attended Faculty meetings and reported student concerns
- Attended Assistantship Committee meetings
- Helped develop a public service announcement for the Community Clinic
- Helped develop an evaluation form to be used to evaluate TA's performance during their assistantships.

| | |
|---|---|
| Aug 2003-Dec 2003 | Graduate Student Senator representing the Psychology Department<br>▪ Attended Graduate Senate meetings and reported student concerns |

## Memberships

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|---|---|
| Aug 2000-to present | American Psychological Association, Graduate Student Affiliate |