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The influence of individual and team goals on cohesion and performance in youth bowling

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THE INFLUENCE OF INDIVIDUAL AND TEAM GOALS ON COHESION AND PERFORMANCE IN YOUTH BOWLING

by

Steven Howard Frierman

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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

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The purpose of this investigation was twofold: (a) to determine the influence of individual and team goals on cohesion and performance in youth bowling; and (b) to investigate the cohesion-performance relationship. Specifically, it was hypothesized that: (a) individual and group goals would enhance bowling performance more than do-your-best goals; (b) team goals would lead to higher levels of task and social cohesion than either individual goals or do-your-best goals and; (c) cohesion and performance were positively related. Participants were 131 children, ages 10-14, (99 males & 32 females) on 39 teams (18 boys teams, 8 girls teams and 13 co-ed teams). Each team consisted of 3 to 4 members each from 5 different leagues in two bowling centers in Greensboro, NC. All 5 leagues lasted 30 weeks and were divided into three separate seasons of 10 weeks each. At the start of the second season, each team was randomly assigned to one of three bowling conditions: (a) individual goal; (b) team goal; and (c) do-your-best goal. They bowled for 10 consecutive weeks with performance being assessed by team bowling averages and team win totals during the fifth and tenth weeks of the season. Cohesion was assessed by the Group Environment Questionnaire (Carron, Widmeyer, & Brawley, 1985) during the first, fifth and tenth weeks. Results indicated that individual and team goal conditions won significantly more games than the do-your-best goal condition over the 10 week period and

that bowling averages improved from Week 5 to Week 10. Results also revealed no differences in either task or social cohesion among goal conditions, and cohesion and performance were not related. These findings are discussed in terms of Locke's (1968, 1981) mechanistic theory of goal setting as well as the environmental factors associated with youth league bowling.

DEDICATION

This dissertation could not have been completed without the help of many people who can now share in the delight that it is finally finished. Therefore, I dedicate this dissertation to the following people.

First, and foremost, to my wife Tracy, who has been a continuous source of love, strength, understanding, and most of all joy. Her involvement in my life has taught me how much fun it is to share life with someone you love.

Aunt Linda and Uncle Stan who were always just a phone call away. They are as close to me as two people can possibly be. Their weekly long distance phone calls always seemed to put a smile on my face and a warmth in my heart.

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To my sister, Mindy, who taught me almost everything I needed to know to begin a career involved in sports.

Finally, this dissertation is dedicated to the memory of my parents, Joyce and Arthur Frierman, who have remained a continuous source of strength in my life. Mom and Dad, although you are gone in the physical sense, you have taught me the value of hard work. You have always been there for me and even though you are gone in the physical sense, I know you will continue to be with me in my mind and my heart, forever. Hey, Mom, I didn't end up in the bakery!!!

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Although tentative conclusions can be drawn regarding the cohesion-performance relationship, few statements can be made about how cohesiveness is developed and maintained in sport teams. When investigating the body of literature on cohesion, the majority of studies attempt to correlate cohesion with some type of outcome, usually performance or satisfaction. Few if any studies have attempted to isolate potential sources of cohesion to determine if indeed, they are related to cohesion, and if they influence performance.

In particular, the use of goals has been anecdotally linked to cohesion, however, no systematic research has determined if goals and cohesion are related at all or to what degree. For example, Carron (1988) has suggested that one way to increase cohesion in teams is to establish a high norm for productivity by setting up specific, quantitative, and challenging team goals. Similarly, Cartwright and Zander (1968) in their work with groups suggested that group goals are the primary ingredients necessary to enhance performance, create personal satisfaction of members, and raise group morale. It is important to note, however, that even if goals are positively related to cohesion, the logical question is what type of goal(s) work best to enhance cohesion and subsequent performance. Intuitively, one might suggest that if cohesion is a

group concept and goals are linked to enhancing cohesion, then group or team goals would work best. However, Locke (1981, 1985) and his associates have demonstrated the robust and replicable nature of setting individual goals while working with people outside of sport and have suggested that the principles of individual goal setting are applicable to groups in sports as well.

The majority of studies focusing on cohesion in sport have underrepresented the concept of cohesion by measuring only social aspects of cohesion, usually defined as interpersonal attraction. While the results of many of these investigations favored a positive cohesion-performance relationship for interacting sports (i.e., Widmeyer & Martens, 1978; Ball & Carron, 1976; Klein & Christianson, 1969), the results of studies using coacting sports (e.g., bowling, rowing, rifle shooting) suggest an inverse relationship. However, perusal of published research revealed only three studies investigating the cohesion-performance relationship within a coacting environment over a thirty-year period (i.e., Landers & Luschen, 1974; Lenk, 1969; McGrath, 1962). Moreover, the reliance on attraction (e.g., intra-team fondness) as the primary method of assessing cohesion in these studies leads one to question whether the actual findings were between cohesion and performance or attraction and performance.

Recently, however, studies have begun to focus on cohesion from a multidimensional perspective, incorporating both task and social factors in the assessment of cohesion. Specifically, studies by

Frierman and Gill, (1989) and Frierman, Weinberg, and Jackson (1991) have indicated that both task and social cohesion were positively related to adult bowling performance.

A glaring omission in all the sport cohesion studies is the dearth of literature on children ranging in age from elementary school to pre-adult. To date, no research has sought to investigate the cohesion-performance relationship with youths involved in any type of formal sport, although the relationship between cohesion and performance appears just as worthy of investigation with child athletes as with adult athletes.

In summary, only recently has cohesion been measured as a multidimensional concept, incorporating both task factors (e.g., group goals; group objectives; productivity; performance) and social factors (e.g., group relationships; acceptance; personal involvement with teammates; and social interactions within the group). Presently, however, there is a lack of research focusing on the influence of individual and team goals on cohesion and performance in youth sport. Therefore, the primary purpose of this research was to examine the influence of individual and team goals on cohesion and performance in youth bowling. Specifically, it was hypothesized that: (1) individual and team goals will enhance team bowling performance more than do-your-best goals and (2) team goals will lead to higher levels of task and social cohesion than either individual goals or do-your-best goals. The secondary purpose was to investigate the cohesion-performance relationship. Here, it was

hypothesized that cohesion and performance would be positively related. Furthermore, there is a stronger relationship between task cohesion and performance than between social cohesion and performance.

CHAPTER II

REVIEW OF LITERATURE

The literature relevant to the current investigation will be presented in four sections. The first section deals with the various definitions and theoretical interpretations of cohesion, the relationship between cohesion and performance, and the instruments used to measure cohesion. The second section involves the definitions and theoretical interpretations of an individual goal, the principles of goal setting, and the relationship of individual goals and performance. The third section deals with the problems involved in operationally defining and measuring group goals, and the relationship between group goals and performance. The final section examines the literature pertaining to the relationship between cohesion, cooperation, and goal setting.

Cohesiveness in Sports

Anyone who has been involved in team sport knows the value of cohesiveness. Many athletes, coaches, and spectators believe that cohesiveness is often a deciding factor in winning or losing in team sports. In a 1982 interview with Sports Illustrated, former major league baseball manager Dick Williams highlighted the importance of cohesion by stating, "Individual stats mean nothing. Execution and teamwork are what do matter." Similarly, after winning the 1987 NBA championship, it was Earvin "Magic" Johnson who expressed his joy by announcing, "It was a total team effort, a total team effort."

Finally, Chicago Bears football coach Mike Ditka was quoted during the 1990 NFL season as saying, "The best players aren't always the best team. The best team is the best team." Given the popularity of cohesiveness in sports talks and interviews it is not surprising that cohesiveness remains a popular research topic (Gill, 1986).

Definitions and Theoretical Interpretations of Cohesion

The term "cohesion" was introduced by Lewin (1947) when he emphasized two categories of forces associated with group participation: cohesion and locomotion. Locomotion refers to the purpose behind the group's existence, whereas cohesion represents a property that contributes to the unity and solidarity of the group. According to Cattell (1948), both these forces are stochastic--without group cohesion there can be no group locomotion. Considering the importance of these forces, it is not surprising that some social scientists (Golembiewski, 1962; Lott & Lott, 1965) have considered cohesion to be the most important small group variable (Widmeyer, Carron, & Brawley, 1985).

The most frequently cited definition of group cohesiveness was the one advanced by Festinger, Schachter, and Back (1950) in their housing study. They defined cohesion as "the total field of forces causing members to remain in the group (Festinger et al., 1950, p. 164). Elaborating on the concept, Festinger et al. identified two classes of forces that contribute to cohesiveness: (a) attractiveness of the group (the degree to which the group possesses a positive valence for its members); and (b) means control (the extent to which

the group serves to mediate important goals or objectives for its members). Though Festinger et al. referred to cohesion as a bidimensional construct, their only operational measure of group cohesion was a single question asking residents to name their friends who lived inside and outside of their residential community (Cartwright, 1968). Thus, group cohesion was operationally defined in a restricted unidimensional manner--as the degree of interpersonal attraction present within the group. Moreover, the notion of means control was entirely overlooked and never addressed by Festinger, his colleagues, or the majority of researchers investigating cohesion and its antecedent variables for most of the next three decades.

Gross and Martin (1952), criticized Festinger et al.'s operational definition of cohesiveness, claiming it focused on the individual as the unit of reference rather than the group. They argued that it was conceptually more logical to consider cohesion as a resistance by the group to disruptive forces.

A second criticism in the Festinger et al. (1950) definition has been the inability and resultant difficulty in converting "the total field of forces" into operational terms (Carron, 1980). By utilizing "interpersonal attraction" as the only dimension involved in "the total field of forces" the concept of group cohesion becomes underrepresented, causing a potential conflict between theoretical and operational perspectives (Escovar & Sim, 1974). For example, friendships can be considered a measure of interpersonal attraction,

but the number of friendships in a work group, social group, or sport team is never the sole basis for individuals sticking together and remaining united in the pursuit of their goals and objectives (Carron, 1988).

A third criticism is that operational measures of cohesion based solely on attraction, fail to recognize any task or normative factors that relate to cohesion such as team goals, leadership, role identification, contractual or organizational policies and individual and team member characteristics. In addition, they do not account for cohesiveness in situations characterized by negative affect (i.e., dissatisfaction, dissection, hostility). In short, you do not have to like your teammates to be successful in sport, nor do you have to like your teammates to be task cohesive. The athletic world typifies numerous examples of sport teams where seemingly low levels of tension do not lead to the breakup of the group or the sufficient disruption in the team to detract from ultimate performance success (Carron, 1982). This point is highlighted by Anderson (1975) who showed that value similarity (i.e., interpersonal attraction) was an important determinant of group cohesion in informal social groups, whereas goal path clarity (i.e., consensus on group task procedures) was strongly related to cohesiveness in task oriented work groups.

A fourth and final criticism is statistical in nature and deals with the empirical deficiences in various cohesiveness measures. Although different operational measures of cohesiveness logically

should be interrelated if all are tapping the same construct, Eisman (1959) and Ramuz-Nienhuis and Van Bergen, (1960) discovered empirical deficiences while using the following five operational measures of cohesiveness with ongoing university student groups: (a) a sociometric index based on friendship; (b) a direct rating of group attractiveness; (c) the average number of reasons given by group members for belonging to the group; (d) the number of same reasons for group membership given by a majority of the members; and (e) the degree of similarity existing among group members with respect to their values. Rank-correlation coefficients yielded no significant inter-relationships among any of the measures, thus suggesting that either or all of the five constructs were not accurately assessing cohesiveness.

In spite of these inadequacies, many researchers have advocated the use of attraction, namely "interpersonal attraction" and attraction to the group" (i.e., Deep, Bass, & Vaughan, (1967); Fiedler, Hartman, & Rudin, 1952; Hornsfall & Arensberg, 1949) in their assessment of group cohesion, while disregarding other measures of cohesion. Consequently, the concept of attraction has been equated with cohesion. For example, Lott and Lott (1965) defined cohesion as that group property which is inferred from the number and strength of mutual positive attitudes among the members of a group" (p 254). Similarly, Shaw (1976) suggested that cohesion is reflected in the degree to which group members are attracted to each other, or the degree to which the group coheres or "hangs

together" (p. 197). Finally, Nixon (1977) viewed cohesiveness as a kind of synthetic or aggregate property of the sum of the feelings of attraction to the group of each of the individual group members.

Although various problems have accounted for the confusion associated with the conceptualization and subsequent measurement of cohesion, a number of authors have attempted to clarify the group construct in one of two ways: (a) separating cohesion from attraction and (b) refining the pre-existing nominal definition proposed by Festinger et al. (1950). One of the earliest attempts was made by Van Bergen and Koekebakker (1959) when they defined attraction to the group as the interaction of motives working on the individual to stay in the group and cohesion as the degree of unification of the group field. Thus, cohesion and attraction are presented as separate components.

More recently, Evans and Jarvis (1980) suggested that cohesion may be more than just "attraction to the group" and that researchers should clearly separate the two concepts in their operational definitions and measurement techniques. They go on to define cohesion as a group phenomenon related to the achievement of group goals. Furthermore, they defined "attraction to the group" as the individual's degree of identification with the group's activities which includes an individual's sense of involvement in the group, feelings of acceptance, and desire for continued group membership (Evans & Jarvis, 1980).

Many researchers agree with Evans and Jarvis and have redefined the concept of cohesion to include some aspect of goal striving or goal achievement. For example, Bonner (1959) defined cohesion as "a system of interlocking roles initiated and sustained by standards either already existing or evolved by members of a group in the course of striving for a common goal" (Bonner, 1959, p. 69). More recently, Carron (1982) has suggested that cohesion is "a dynamic process which is reflected in the tendency for a group to stick together and remain united in pursuit of its goals and objectives."

Summary

In summary, the lack of clarity between conceptual and operational definitions of cohesion has made it increasingly difficult to compare results across studies in any meaningful way. As Cartwright (1968) has noted, "the development of a measuring instrument cannot proceed much in advance of a basic understanding of the nature of the phenomenon to be measured" (Cartwright, 1968, p. 95). Similarly, Albert and Eisman (1953) have pointed out that "the concept must precede the measurement and the more general and vague the conceptual definition, the more probable are questions of procedure and adequacy of operational definitions" (in Bonner, 1959, p. 141). However, it is important to note that the modifications of pre-existing definitions of cohesion to include such aspects as goal pursuit, goal achievement, and role awareness have

begun to provide a clearer understanding of what cohesion is and how it can be measured.

Cohesion as a Bidimensional Construct

Numerous investigators have subscribed to the notion that cohesion is a bidimensional construct (Carron, 1982; Gill, 1977). As stated earlier, Festinger et al., (1950) referred to cohesion as a bidimensional construct when they defined two sets of forces contributing to the attractiveness of the group in and of itself, and forces that mediate the goals and objectives of the group. Similarly, Homans (1950) presented a bidimensional construct of cohesion when he differentiated two categories of forces attracting individuals to a group: task forces and social forces. Task forces reflect an orientation toward group goals, group performance, and the task itself, whereas social forces represent an orientation toward harmonious interpersonal relationships. Enoch and McLemore (1967) considered attraction-to-group to have two components: (a) intrinsic attraction and (b) instrumental attraction. Perhaps Mikalachki (1969) made one of the clearest distinctions when he advocated that cohesiveness be subdivided into task and social components. According to Mikalachki, task cohesion exists when the group coheres around the task it was organized to perform while social cohesion exists when the group coheres around social (nontask) functions (Carron, Widmeyer, & Brawley, 1985). The most widely referenced work on the bidimensional nature of cohesiveness, however, was conducted by Hagstrom and Selvin (1965). They factor

analyzed 19 items perceived to be relevant to group cohesiveness and discovered two underlying dimensions: social satisfaction (satisfaction with group membership) and sociometric cohesion (friendship or interpersonal attraction). By conceptually distinguishing between these two types of cohesiveness, group membership may be considered highly attractive without members being friends or liking each other. Conversely, groups may lack interpersonal attraction, yet sustain a large proportion of members as mutual friends (Gill, 1977). This bidimensional perspective suggests attraction may reflect either friendship or personal preference for one another or attraction may be toward some goal which the group mediates for the individual (Yukelson, 1984).

Cohesion as a Multidimensional Construct

More recently, the trend in the literature has been to focus on cohesion from a multidimensional rather than a bidimensional perspective. For example, Donnelly, Carron, and Chelladurai (1979) have introduced a third type of force thought to influence group cohesion, namely a normative force that restrains an individual within the group. They conclude that a combination of individual and group factors such as interpersonal attraction, task attraction, and attraction to the group along with normative considerations coincide to contribute to group cohesiveness. More recently, Carron (1982) went beyond the criticism of earlier cohesion research and advanced a conceptual system of cohesion, identifying four antecedents or contributors to sport cohesiveness: (a) environmental (contractual

and organizational regulations); (b) personal (individual characteristics of team members, satisfaction); (c) leadership (coaching behaviors); and (d) team factors (group task characteristics, ability, norms, and stability). Finally, Yukelson, Weinberg, and Jackson (1984), in an attempt to create a new cohesion questionnaire, accounted for four broad dimensions of team cohesion: (a) attraction to the group; (b) unity of purpose; (c) quality of teamwork; and (d) the perceived value of one's role on the team. According to Yukelson et al. (1984), the last three factors can be considered "task factors," however all four dimensions are somewhat independent of each other. This implies that the sport researcher needs to assess each dimension, thus inferring that group cohesion is a multidimensional phenomenon.

The Relationship Between Cohesion and Performance

Over the past 30 years, researchers have been investigating the effects of cohesion upon sport performance with hopes of providing empirical support for the notion that high cohesive teams perform better than low cohesive teams. Though social scientists such as Cartwright (1968), Cattell (1948), and Shaw (1976) have developed hypotheses in favor of a positive cohesion-performance relationship, the sport literature is equivocal.

For example, studies conducted by Arnold and Straub (1972), Klein and Christiansen (1969), Martens and Peterson (1971), and Widmeyer and Martens (1978) have found highly cohesive basketball teams to be more successful than less cohesive basketball teams.

Similarly, Ball and Carron (1976) using intercollegiate ice hockey players, Petley (1972) studying high school wrestlers (as cited by Straub, 1980) and Bird (1977) investigating intercollegiate volleyball players have also found that highly cohesive teams were more successful than less successful teams.

In contrast, a number of studies have shown either a negative or no relationship between cohesion and performance. While studying high school basketball teams, Fiedler (1954) found a negative relationship between cohesion and successful performance. McGrath (1962) came to a similar conclusion when he reported an inverse relationship between team success and interpersonal orientations with rifle teams. During a case study of German world class rowing teams, Lenk (1969) observed that rowing crews could be quite successful despite poor interpersonal relations and intense conflict. However, Lenk notes that extrinsic rewards or goals might have kept the team together and maintained optimal performance throughout competition. Finally, Landers and Luschen (1974) reported a negative relationship between cohesion and performance with intramural bowling teams. It should also be mentioned that Melnick and Chemers (1974) found no systematic cohesion-performance relationship in intramural basketball teams. As a result of these inconsistencies regarding the relationship between cohesion and performance in sport, the literature is marked by its equivocality (Gill, 1977).

A number of researchers offer potential explanations for the inconsistencies of past research. For example, Landers and Luschen (1974) have suggested that task demands confronting various teams may induce a positive relationship between cohesion and performance within interacting sports (e.g., basketball, volleyball) and a negative relationship between cohesion and performance for coacting teams (e.g., bowling, golf). However, a perusal of the sport cohesion literature reveals only three studies (McGrath, 1962; Lenk, 1969; Landers & Luschen, 1974) that investigated the cohesion-performance relationship for coacting teams during that time period. More important, all of these studies suffered from major flaws, most notably the use of various measures of attraction as their operational definition for cohesion. In addition, Landers and Luschen failed to control for ability differences in their bowling study which might have been the actual cause of their results. Lenk (1969) reported on a case study with world class rowers and noted that extrinsic rewards such as prestige, competition, and group goals might have confounded the overall findings. Finally, McGrath (1962), while working with ROTC rifle teams, chose to divide groups according to scores on a "perceptual index" (i.e., the extent to which the individual saw others as warm and supportive) and a "behavioral index" (i.e., the extent to which others saw their teammates as exhibiting positive interpersonal behaviors). These two measures are very similar and thus a strong possibility exists as to whether

or not each team was accurately classified into high and low cohesive teams at the start of the study.

Recently, however, studies by Frierman and Gill (1989), Frierman, Weinberg, and Jackson (1990) and Williams and Widmeyer (1990) have demonstrated that cohesion significantly differentiated between high and low performance teams within a coacting sport environment. Specifically, Frierman and Gill found that a social cohesion manipulation led to higher league positions and better playoff performances than the control bowling teams. In addition, Frierman et al., (1990) discovered that early season attraction to group-task cohesion (ATG-T) and mid season ATG-T cohesion, group integration-task cohesion (GI-T) and attraction to group-social cohesion (ATG-S) as measured by the Group Environment Questionnaire (Carron, Widmeyer, & Brawley, 1985) correctly classified successful and unsuccessful teams 80.4% and 65.4% in mid and late season, respectively. Moreover, high ATG-T teams won significantly more games in early, mid and late season than low ATG-T teams. Similarly, Williams and Widmeyer discovered that the four cohesion measures of the GEQ (ATG-T; ATG-S, GI-T, & GI-S) significantly predicted 18.6% of performance outcome with collegiate golfers. Thus, it seems that the use of the GEQ, in conjuction with controlling for ability differences has demonstrated that cohesion is positively related to performance, regardless of the task demands.

A second explanation for the confounding cohesion-performance results stems from the inability of past researchers to determine causality between cohesion and performance. That is, does cohesion lead to performance success or does performance success lead to cohesion? Most of the early sport cohesion investigators failed to consider causal flow or they did not have an adequate time dimension or statistical analyses and were therefore unable to establish a causual direction (Williams & Hacker, 1982). Instead, researchers investigated the relationship between cohesion and performance from one of two perspectives: (a) cohesion to performance--cohesion measures preceding performance measures (i.e., Klein & Christiansen, 1969; Martens & Peterson, 1971; Stogdill, 1972; Vander Velden, 1971; Widmeyer & Martens, 1978) or (b) performance to cohesion--performance measures preceding cohesion measures (i.e., Bird, 1977; Landers & Crum, 1971; Peterson & Martens, 1972; Ruder & Gill, 1982).

Evidence has now shifted to suggest that causal links between cohesion and performance is circular in nature. The use of cross-lagged panel correlational analyses (CLPC), a quasi-experimental technique that provides a method of examining causal relationships among variables that are not easily manipulated has begun to shed light on the causality issue. To apply CLPC, two constructs, (X and Y, or in this case cohesiveness and performance) must each be measured at two points in time (Time 1 and Time 2). The essential comparison used to establish causal predominance is the cross-

lagged differential (i.e., the difference between the correlation of cohesiveness at Time 1 with performance at Time 2 and the correlation of performance at Time 1 with cohesiveness at Time 2).

The CLPC design was originally introduced to cohesiveness research by Bakeman and Helmrich (1975) with their investigation of aquanaut teams and then later adopted to sport and improved in three separate, but related studies. Although their findings indicated a significantly stronger causal direction for performance-cohesion (r=.86) than cohesion-performance (r =.13), Zander (1979) questioned the validity of their findings due to their operational definition of cohesiveness--defined as the percentage of time each aquanaut dyad was observed in conversational behavior during leisure time activities. Carron and Ball (1977) applied the same design in a study of ice hockey teams and similarly observed stronger relationships from performance success to cohesiveness than vice versa (Gill, 1986).

Two recent studies applied path analyses and partial correlations as well as cross-lagged panel analyses to determine causality in the cohesiveness-performance relationship. Landers, Wilkinson, Hatfield, and Barber (1982) found evidence for both the influence of cohesiveness on performance and the influence of performance on cohesiveness with cross-lagged techniques, but most relationships disappeared with path analyses (Gill, 1986). Williams and Hacker (1982) reported that the cross-lagged technique supported both directions of the cohesiveness-

performance causality, but path analyses suggested that the causal flow was stronger from performance to cohesiveness.

Unfortunately, the inability of researchers to adequately control for such factors as team longevity, rate of player turnover, coaching styles, and previous team success may prevent the answer to the question, "does cohesion predict performance success or does performance success predict cohesion?"

A final explanation regarding the inconsistent findings may be the extreme variability in which cohesion has been measured (Yukelson, 1984). Generally, the literature recognizes two ways in which cohesion has been assessed: (a) selected patterns of behavior; and (b) questionnaires. Although a few researchers have employed a variety of behavioral indices including clique formation (Eitzen, 1973), locomotion factors (number of members remaining in or leaving a group; Libo, 1953; Vender Velden, 1971), patterns of team play (i.e., distribution of passes; Klein & Christiansen, 1969), and group interaction (Bakeman & Helmrich, 1975), the most widely endorsed method of assessment has been the questionnaire, namely the Sport Cohesiveness Questionnaire (SCQ) (Martens, Landers, & Loy, 1972).

The SCQ consists of seven separate items designed to obtain: (a) the degree of interpersonal attraction within the group; (b) personal power of influence; (c) value of membership; (d) individual sense of belonging to the team; (e) degree of enjoyment; (f) level of teamwork; and (g) the degree to which the team is closely knit.

These questions can be neatly classified in three general categories: (a) sociometric measures (interpersonal attraction and personal power of influence; (b) direct individual assessment (sense of belonging, value of membership, and enjoyment); and (c) direct team assessment of cohesion (teamwork and closeness). Each one of these items, with the possible exception of teamwork, measures some type of attraction, either attraction between and among group members or attraction to the group itself (Carron, 1982).

Although the SCQ has been frequently employed throughout the literature (i.e., Arnold & Straub, 1972; Ball & Carron, 1976; Landers & Crum, 1971; Martens & Peterson, 1971; Peterson & Martens, 1972; Widmeyer & Martens, 1978) and it appears to have good face validity for sport teams, its reliability as well as construct validity remain untested (Gill, 1977). For example, studies using the SCQ have revealed that while direct measures of cohesion have supported a positive cohesion-performance relationship, sociometric or indirect measures of cohesion were not related to team performance. Additionally, Widmeyer and Martens (1978) factor analyzed all measures on the SCQ and found descriptive measures of cohesion (questions asking subjects to directly evaluate the team's cohesiveness) to be better predictors of team success than indirect or sociometric measures of cohesion. In fact, they found interpersonal attraction to be unrelated to either of the two measures of cohesion which evolved from their analyses; descriptive cohesion and inferential cohesion.

In an attempt to overcome the limitations in the SCQ and provide psychometrically sound cohesion assessment instruments, both Yukelson (1984) and Carron (1985) and their respective colleagues conducted comprehensive research programs to develop sport cohesion inventories. According to Carron (1988) two major protocols are used in developing any instrument or inventory: a data driven approach and a theory driven approach. With the data driven approach, a large number of items are collected that are thought to reflect situations in which the concept is manifested. This battery of items is given to a sample of subjects and the results are analyzed. Those items which fall together in meaningful patterns (clusters, factors) are retained and a suitable label is attached. The remaining items are discarded. The results from the statistical analysis are then used to help identify the concept. This was the protocol used by Yukelson, Weinberg, and Jackson (1984) to develop the Multidimensional Sport Cohesion Instrument (MSCI).

When using the theory driven protocol, a conceptual model is developed initially. The conceptual model then provides the basis for the subsequent development of an initial battery of items. Statistical analyses are then used to determine whether the battery of items adequately reflects the conceptual model. This was the general strategy used by Carron, Widmeyer, and Brawley (1985) when they developed the GEQ.

There are advantages and disadvantages to each approach. For example, using the data driven approach a questionnaire can be

designed specifically to gather information on one particular population such as basketball teams. It allows for a more accurate and indepth analysis of what a construct is in a certain setting. The disadvantage is that the items created from a data driven approach may not be tapping the exact same construct in a different setting. For example, Yukelson et al.'s (1984) MSCI was designed specifically to measure cohesion in basketball, and while some of the items may be applicable to other sports (e.g., baseball, football) its intention was to measure cohesion strictly in basketball. The data used to design the MSCI was gathered only from male and female basketball teams and thus its validity can be called into question if the MSCI was used in a different sport setting. Perhaps this is a major reason why the MSCI has never been used to measure cohesion in other sports. The advantage of a theory driven approach is that it is applicable to many settings. For example, the GEQ was developed from a conceptual model of cohesion that was derived from a variety of sport and nonsport settings. Consequently, the items on each of the four scales can and have been used to measure different types of cohesion across a variety of sports and exercise activities including baseball, bowling, and exercise classes. The disadvantage of a theory driven approach is that it may not be indepth or specific enough to accurately measure a specified construct in a particular setting. For example, certain questions on the GEQ focus on team parties and gatherings. Although these questions are used to measure perceptions of social cohesion, many teams do not have

parties. However, that does not mean they are not socially cohesive, and thus, those items may not be tapping social cohesion in that setting.

Summary

In summary, the decision to use either a data driven or theory driven approach to develop assessment inventories is dependent upon the purpose behind using it. If focusing solely on one population (e.g., basketball teams) in search of indepth and specific perceptions of an identified construct, then a data driven method may be more appropriate. However, measuring a construct across a variety of different environments assuming that the meaning of that construct is stable from one setting to the next, then the theory driven approach may be best.

Cohesion Measures

The Multidimensional Sport Cohesion Instrument (MSCI)

The MSCI evolved from the belief that cohesion in sport teams reflects factors associated with the goals and objectives the group is striving to achieve, as well as factors associated with the development and maintenance of positive interpersonal relationships (Yukelson et al., p. 106). The MSCI is a 22-item questionnaire divided into four categories (a) attraction to the group (i.e., degree to which individuals are attracted to and satisfied with group membership); (b) unity of purpose (i.e., commitment to the group's norms, rules, and goals); (c) quality of teamwork (i.e., how well teammates work together to achieve group success); and (d) valued

roles (i.e., degree of identification with group membership, sense of belonging, role valued by teammates). Although initial testing was done with male and female basketball teams and early statistical analyses indicated good internal consistency, the MSCI has not yet been applied to other sporting environments, nor has it been employed to assess cohesion in sport after the initial testing was conducted in 1984.

The Group Environment Questionnaire

In an attempt to unify both conceptual and operational measures of cohesion as well as create a valid and reliable method of assessment for cohesion in sport, Carron, Widmeyer, and Brawley (1985) developed an 18-item questionnaire entitled the Group Environment Questionnaire (GEQ). The GEQ is composed of four measures of cohesion designed to assess group member's perceptions of team cohesiveness. They include: (a) individual attractions to group-task (individual team member's feelings about their personal involvement with the group task, productivity, goals, and objectives); (b) individual attractions to group-social (individual team member's feelings about personal involvment, desire to be accepted, and social interaction with the group); (c) group integration-task (individual team member's feelings about the similarity, closeness, and bonding within the team as a whole around the group's task); and (d) group integration-social (individual team member's feelings about the similarity, closeness, and bonding within the team around the group as a social unit).

The GEQ is based on a conceptual model of cohesion that distinguishes between the individual and the group and task versus social concerns. In addition, the model is divided into two major categories; a member's perceptions of the group as a totality (group integration) and a member's personal attractions to the group (individual attractions to the group) (Carron et al., 1985). Thus, cohesion is treated as a multi-faceted concept, satisfying the long withstanding need for a psychometrically sound instrument to assess group cohesion (Carron et al., 1985).

Summary

The major reason for the disparity between past and present research findings within a coacting sports environment appears to be how cohesion was operationalized. In the past, researchers assessed only one aspect of cohesion, namely social cohesion or interpersonal attraction. Thus, it is entirely possible that the relationship of results might have been between attraction and performance, rather than cohesion and performance. In contrast, present research has adopted a multidimensional framework of cohesion. This has accorded researchers the opportunity to interpret cohesion from a broader perspective, taking into account both task and social aspects of cohesiveness.

Recent research in a coacting sports environment (Frierman & Gill, 1989; Frierman, Weinberg, & Jackson, 1990; Widmeyer & Williams, 1990; Williams & Widmeyer, 1990) has indicated that cohesion and performance are positively related. Moreover, the work

of Brawley, Carron, and Widmeyer has suggested that there is a stronger relationship between task cohesion (ATG-T, GI-T) and performance outcome than between social cohesion (ATG-S, GI-S) and performance outcome. However, empirical support can only be obtained with more research of this nature. Therefore, one purpose of this investigation is to re-examine the cohesion-performance relationship in the sport of bowling. Based upon this rationale it is hypothesized that there is a positive relationship between cohesion and performance in bowling teams. More specifically, it is also hypothesized that there is a stronger relationship between task cohesion (ATG-T, GI-T) and performance outcome than between social cohesion (ATG-S, GI-S) and performance outcome.

Theories and Research in Individual Goal Setting

Although numerous definitions have been offered for the term "goal," the most widely accepted definition comes from Locke, Shaw, Saari, and Latham (1981), when they defined a goal as "attaining a specific standard of proficiency on a task, usually within a specified time limit." In short, a goal is that which an individual describes as an accomplishment being sought (Locke et al., 1981). Thus, it can be said that goals focus on achieving some standard, whether it is raising a bowler's average 10 pins, reducing a runner's time in the marathon by one minute or getting A's in school.

Even though the definition provided by Locke and his colleagues is a good general description of a goal, sport psychologists have at times found it useful to make specific distinctions between types of

goals (Gould, 1986). For instance, McClements and Botterill (1979, 1980) have suggested that a program for goal-setting should include a seasonal goal, which takes into account the athlete's long term-goal, commitment potential, opportunity, and present performance level. Furthermore, they divided goals into three categories: subjective goals (e.g., having fun, getting fit, or trying one's best), general objective goals (e.g., making a team or winning a championship), and specific objective goals (e.g., increasing a batter's average in baseball or decreasing the number of turnovers in basketball. Similarly, Martens (1987) and Burton (1983) have made distinctions between outcome goals, which represent the end result of a performance or contest (e.g., winning), and performance goals, which focus on improvements relative to one's own past performance (e.g., raising one's bowling average by 3 pins). Finally, Creel (1980) has differentiated between long-term goals and short-term goals. He argues that while a long-term goal is an important aspect of enhancing future performance, it can only be attained if immediate short-term goals are established in some sequential order. Similarly, Gould (1986) has conceptualized the relationship between long-term goals and short-term goals as a staircase with the long-term goal represented as the top stair and each individual stair starting at the bottom being a short-term goal.

Three explanations have been proposed to describe how goals influence performance. Locke (1968) and his associates (1981) have subscribed to a mechanistic theory to explain the goal-performance

relationship. Burton (1983) has proposed a cognitive theory to explain how goal setting influences performance in the athletic world and Garland (1985) has identified a cognitive mediation theory to explain the linkages between individual task goals and human performance.

In Locke et al.,'s mechanistic theory, goals are said to influence performance in four ways. First, they direct an individual's attention and action to important aspects of the task. Thus, by setting goals, a bowler's attention and subsequent action should be on improving specific skills such as armswing, release, and/or follow through, instead of simply, "bowling better." Second, goals mobilize energy and effort. For instance, by setting practice goals, a tennis player will exhibit greater effort in practice in attempting to achieve these objectives. Third, goals increase persistence. Often during a season, athletes become stale or bored and get sidetracked from their long-term goals. However, setting short-term goals can revitalize an athlete by giving them something immediate to focus on and strive for. Finally, goals help motivate the development of appropriate task strategies. Baseball players may employ new batting techniques (e.g., open stance, lighter bat, hit to the opposite field) in an effort to achieve hitting goals that have been set by the athlete and/or the coach.

In contrast to the Locke et al. theory (1981), Burton's cognitive theory focuses solely on how goal setting influences performance in athletic environments. Athlete's goals are linked to their levels of

anxiety, motivation, and confidence. That is, when athletes focus solely on outcome or winning goals, unrealistic future expectations often result. Such expectations can lead to lower levels of confidence, increased cognitive anxiety, decreased effort, and poor performance. Unlike outcome goals, performance goals are both in the athlete's control and flexible. Moreover, when properly employed, performance goals assist the athlete in forming realistic expectations. This, in turn, results in optimal levels of confidence, cognitive anxiety, and motivation, and ultimately, in enhanced performance (Gould, 1986).

Somewhat similar to Burton's theory is Garland's cognitive mediation theory which suggests that higher task goals result in higher performance through the process of two mediating variables: (a) performance expectancy and (b) performance valence. Performance expectancy is defined as a composite of an individual's subjective probabilities for reaching a number of different performance levels over a range of performances. Performance valence is defined as a composite of anticipated satisfaction that an individual gains by producing a number of different performance levels over a range of performances. Performance expectancy is theorized to have a positive influence on performance by invigorating action and maintaining high levels of effort over time. Individuals with high performance expectancies believe in their ability to do well. This may result in high motivation when beginning to work on an identified task and it is also likely to result

in increased persistence in the face of early failures. Conversely, performance valence is theorized to exert a negative influence on performance as a result of increasing anticipatory satisfaction (or decreasing dissatisfaction) from any given level of performance. For example, if two people bowled an identical score, but one person was satisfied with their score, while the other person was dissatisfied, one would expect the individual who was dissatisfied (i.e., less positive valence) to exert more future effort to surpass his or her current level of performance. He or she might set more difficult goals, persist in the face of failure, and attempt to develop certain task strategies that are believed to enhance future performance.

Based on these three theories, it is important for coaches and athletes to understand what goal setting does and why it works. Once they become aware of the various mechanisms that cause changes in performance as well as anxiety, confidence, and motivation, they can begin to work on the actual process of how to set goals.

Goal Setting Guidelines and Principles

While a number of sport psychologists have developed a series of goal setting principles or guidelines designed to help athletes and coaches set effective goals (Gould, 1986; Martens, 1987; Orlick, 1980) the underlying premise of how to set goals comes directly from the work of Locke and his associates (1968; 1981; 1984). Locke et al. designed a seven-step process that emphasizes the

following: (1) specify the nature of the task to be accomplished; (2) specify how performance is to be measured; (3) specify the standard or target to be aimed for in quantitative terms based either on directly measured output or on a behavioral type scale; (4) specify the time span involved; (5) if there are multiple goals, rank them in terms of importance or priority; (6) rate each goal quantitatively as to importance (priority) and difficulty; and (7) determine the coordination requirements for goal achievement. If the tasks are highly interdependent, use group goals. If group goals are used be sure to develop a means of measuring each individual's contribution to the group product.

More recently, Gould (1986) established a set of 10 goal-setting guidelines designed for sport. To illustrate how each of these guidelines work in determining how to set goals, I will use bowling as well as a few other sports as examples.

First, set explicit, specific, and numerical goals rather than do-your-best goals or no goals at all. This can be accomplished by specifying the activities into quantitative terms (e.g., setting a goal of bowling 10 pins over average versus setting a goal of bowling well). The quantification of a goal reduces ambiguity by allowing less leeway for individual interpretation. For example, bowling well can mean different things to people, but increasing goal specificity reduces the probability of misunderstanding between individual and group members.

Second, set difficult, but realistic goals. Extensive research based on more than fifty studies has established that, within reasonable limits, the harder or more challenging the goal, the better the resulting performance (Locke, 1968). According to Locke and Latham (1984), a hard goal leads to greater performance than an easy or moderate goal because people try harder to attain a hard goal. They exert more effort, show fewer lapses of attention or performance, and work faster (Locke, Feren, McCaleb, Shaw, & Denny, 1980). In short, people become more motivated in proportion to the level of the challenge with which they are faced. Modest goals lead to the achievement of modest results, but hard, challenging goals lead to greater levels of achievement. It must be remembered, however, that this is only true when the difficulty of the goal does not exceed the performer's ability. For example, if a bowler's average is 150, a goal of a 200 average over a 10-game period would not be within the limits of the person's ability. However, a 155 average would be considered difficult, but certainly attainable, and within the person's ability.

Third, set short-term as well as long-term goals. As alluded to earlier, short-term goals can be viewed as a stepping stone to long-range objectives. Short-term goals allow athletes to see immediate improvement in performance and in doing so enhance motivation and maximize effort. Thus, if a bowler wants to raise his or her average by 20 pins over the course of a season, it might be beneficial to break the season down into sub-parts and establish short-term

increments of the twenty-pin goal. This way, the bowler can evaluate his or her performance on a more frequent basis and determine how near or far they are to their performance objective.

Fourth, set performance goals as opposed to outcome goals. It has been theorized that outcome goals possess several inherent weaknesses (Burton, 1983; Martens, 1987). First, athletes have, at best, only partial control over outcome goals. For example, a bowler can bowl their high game or series, but fail to achieve the outcome goal of winning because an opponent bowled better. Despite a superb effort, the bowler could not control the performance of his or her competitors. In contrast, by setting performance goals, athletes are no longer doomed to failure. Instead, they increase their probability for success by competing against their own performance standards.

Fifth, set goals for practice and for competition. It is an old sport adage that practice makes perfect. However, that adage should be modified to say that only perfect practice makes perfect. Thus, if goals are used to enhance competitive performances, they should be employed during practice, as well. Common practice goals may include making a certain number of free throws in basketball, running a specified distance in cross country, and hitting the pocket in bowling a pre-determined number of times.

Sixth, set positive goals as opposed to negative goals. Positive goals focus on behaviors that you want to be able to do such as increasing your field goal percentage in basketball or swimming a specified distance in a certain amount of time. Negative goals,

however, focus on behaviors you want to avoid such as not turning the ball over more than once or to not stop running until 10 miles have been completed. Although it is sometimes necessary for athletes to set negative goals, usually goals should be stated in positive terms. By concentrating on the positive instead of the negative, the athlete learns to focus on success rather than failure.

Seventh, establish target dates for attaining goals. Target dates help motivate athletes by reminding them of the urgency of accomplishing their objectives in realistic lengths of time, in addition to providing immediate feedback as to how near or far they are from their goal at a given time. Thus, if a bowler's goal is to raise their average by 10 pins, he or she should set a time limit for when that goal should be reached. Along with the target date, the bowler should also set the number of games (i.e., 10) it will take to reach the goal.

Eighth, identify goal achievement strategies. As important as it is to set realistically difficult and specific goals, it is equally important to determine the strategy that will be employed to achieve a goal. For example, if a bowler's goal is to improve their average by 10 pins, he or she should identify a strategy such as 20 cross alley shots, 20 pocket shots, and 10 one-pin spare shots rather than simply bowling games for score only.

Ninth, record goals once they have been identified. Over the course of a long and competitive season it is easy for an athlete to forget what their goal is. Therefore, it is useful to write down the

goal along with the strategy and the target date for achieving the goal and keep it in a place that is frequently visible such as a locker or on a piece of practice equipment such as the inside of a shoe, a bowling bag, or a tennis racquet cover.

The tenth and final goal setting principle is to provide feedback on a goal. In order for a goal to work for athletes, they must be made aware of how they are doing on a frequent basis. The use of available statistics such as batting and bowling averages, points scored, and yards gained can provide the athlete with instant information regarding where they are in reference to where they want to be.

The Relationship Between Goal Setting and Performance

In the last two and one half decades, knowledge of the effects of individual goal setting on task motivation has accumulated (see Locke et al., 1981 for a review). Typically, reseach has focused on comparing the performance of subjects who set goals with the performance of subjects who were simply told to do their best or given no goals. Sometimes, studies have manipulated goal factors such as difficulty (i.e., Hall, Weinberg, & Jackson, 1987; Latham, Mitchell, & Dossett, 1978), proximity (Frierman, Weinberg, & Jackson, 1990; Weinberg, Bruya, & Jackson, 1985), and feedback given (i.e., Giannini, Weinberg, & Jackson, 1988; Locke et al., 1981). In addition, studies have attempted to investigate a variety of personal factors including race, educational level, and ability (i.e., Carroll & Tosi, 1970).

In recent years, the adaptation of goal setting as a performance enhancement strategy has increased dramatically throughout academic and industrial domains. The academic source dates back to the early 1960's with a myriad of published research focusing on the learning and development of cognitive skills. The organizational source emerges from a desire to increase productivity in the work force, with much of the empirical research designed to test the goal setting principles established by Locke (1968). Specifically, Locke has argued that specific, hard, challenging goals produce higher levels of task performance than either do-your-best goals, easy goals, or no goals. In 1981, Locke and his colleagues documented the robust and replicable nature of goal setting as a source of performance enhancement in industrial and organizational settings. In an extensive review of literature (Locke, et al., 1981) involving a variety of tasks ranging from card sorting and chess to dieting and driving trucks, it was found that 99 of 110 studies supported this hypothesis.

As a result of the consistent findings from the business and educational literature, many coaches, athletes, and physical educators have begun to employ goal setting techniques in order to improve physical performance. However, the empirical support for the effectiveness of goal setting has not been consistently demonstrated in the sport literature. Specifically, individuals in goal-setting conditions have performed better than individuals without goals in a variety of sports and muscular endurance type

tasks (i.e., archery; Barnett & Stanicek, 1979; bowling; Frierman et al., 1990; intercollegiate swimming; Burton, 1983; muscular endurance; Weinberg, Bruya, Longino, & Jackson, 1988; and hand-grip endurance (Hall, Weinberg, & Jackson, 1987; Botterill, 1977). For example, Frierman et al., (1990) found that participants in a long-term goal condition improved their bowling averages significantly more than participants told to "do-their-best." Similarly, Burton (1983) discovered that varsity swimmers deemed to be good at goal setting improved their performance times significantly more than a control group over the course of a swimming season. Finally, Weinberg, Bruya, Longino, and Jackson, (1988) and a later replication by Weinberg, Tenebaum, Pinchas, Elbaz, and Bar-Eli (1991), revealed that children assigned to short-term goals, long-term goals, and a combination of the two conditions did significantly more sit-ups than a group of children told only to "do-their-best." However, no between-group differences have been found in studies using a muscular endurance sit-up task (Hall & Byrne, 1988; Weinberg, Bruya, & Jackson, 1985), weight lifting (Sticher, Weinberg, & Jackson, 1983), circuit training (Hall, Weinberg, & Jackson, 1982), and juggling (Barnett, 1977; Hollingsworth, 1975). Weinberg et al., (1988) point out that factors such as spontaneous goal setting, social comparison, inability to control for performance feedback, and the selection of self-motivating tasks (sit-ups) have confounded goal setting research. Regardless of these inconsistencies, sport practitioners continue to support the relevance and importance of

goal setting as a means of sustaining and increasing motivation, not to mention enhancing sport performance.

A glaring omission in all the goal setting in sport studies is the lack of research focusing on teams. With the exception of a recent study conducted by Brawley, Carron, and Widmeyer (1990), all of the goal setting in sport research has focused on the individual as the unit of reference rather than the group or team. According to Locke and Latham (1985), the concepts of individual goal setting can equally be applied to groups or teams. In fact, studies by Ishida (1980), Latham and Kinne (1974) and Watson (1983) found that specific goals led to better performance than unspecified, vague goals while working in organizational and problem solving groups. In addition, Latham and Yukl (1975), Steers and Porter (1974), and Zander and Newcomb (1967) found that groups performed better if their goals were difficult than if they were easy.

Although empirical data on individual goals and team performance in sport is equivocal, it seems logical that if individual goals can help individual performance, then they should help team performance, too.

Definitions and Interpretations of Group Goal Setting

In his classic book, "The Human Group," Homans (1950) described a group, "as a number of persons who communicate with one another often over a span of time, and who are few enough so that each person is able to communicate with all the others, not at secondhand, through other people, but face-to-face" (p. 145).

Similarly, Cartwright and Zander (1968) proposed that a group was a collection of individuals who have relations to one another that make them interdependent to some significant degree. More recently, Carron (1980) applied the concept of a group to sport and defined a sport group as possessing a sense of unity or collective identity, a sense of shared purpose or objectives, structured patterns of interaction and communication, personal and/or task interdependence, and interpersonal attraction.

In order to gain an understanding of the phenomena related to group goals it is essential that a basic understanding of a group goal is established. Although group goals have been defined in a variety of ways, they can generally be placed into one of two categories: (a) a composite of individual goals; or (b) a set of individual goals designed for a group. In the former, group goals are conceptualized only to have meaning if they are composed of the sum of similar individual goals. The problem is that one group member may have the identical goal as that of another group member. Yet, because of the similarity, the goal can not be representative of the entire group. For example, two teammates decide they want to be the high scorer of their basketball team. The outcome only favors one of the players and not the team, and thus the task of being the high scorer can not be identified as the group or team goal.

Perhaps a bit easier to comprehend is the notion of individual group members creating their own goals and combining them into one group goal. The advantage of this approach is that it lends itself to

operational definition, that being to determine the degree of consensus between group members about their goals for the group. It also allows a clear conceptual method for linking important group variables such as cohesion, locomotion, and role clarity (Cartwright & Zander, 1968). The problem lies in determining how various individual goals for the group are to be combined into a single group goal. Is a unanimous decision required, or majority, or is the goal of one group member (i.e., leader or significant team member) more salient than other members (i.e., reserves or substitutes).

An alternative way to interpret group goals is to view them as a cooperative goal situation. Deutsch (1949) defined a cooperative situation as one in which the goals of the separate individuals are so linked together that there is a positive correlation among goal attainments. Thus, an individual can attain his or her goal if and only if the other participants can attain their goals. Deutsch also defined a cooperative social situation as one in which the gains by one individual contribute to a gain by all individuals. Rewards are shared equally, regardless of the amount of relative personal contribution by various group members. Thus, if the group or team has a goal to win the championship and one member outperforms the other members, but the team wins then the individual's performance becomes overshadowed by what the team has accomplished.

Of the three approaches mentioned above, it appears that Deutsch's version of a cooperative goal situation most clearly depicts a team goal in bowling. For example, if the goal of a four

person bowling team is to average an 800 series, it does not mean that all four teammates must bowl a score of 200 each. Nor does it mean that each member sets an individual goal with the composite average becoming the team goal. Rather, the team goal should be viewed as a dynamic interactive process in which each bowler has an equal share of the team contribution, regardless of the relationships among teammates individual scores. Just as one bowler's high game counts for the entire team, another bowler's low game also counts in the exact same way. Both scores are combined along with the scores of the other teammates to represent a team score which ultimately determines the final team performance.

The Relationship Among Cooperative Goals and Performance

Over the past 50 years, social scientists have attempted to determine the benefits of cooperative goals, usually in comparison to competitive and individualistic goal structures. Although inquiry into competitive goals remains a popular research venture, it is not the intent of this section to compare cooperative goals with competitive goals. Instead, this review will focus on research exploring the use of cooperative goals as a source of enhancing performance and developing team cohesiveness.

Research in the area of cooperative goals has become so extensive that several reviews have been created to help determine its effectiveness across a variety of tasks and academic domains. Although reviews by Sharan (1977) and Johnson and Johnson (1974) have concluded that cooperation was the best method for promoting

achievement, reviews by Michaels (1977) and Cotton and Cook (1982) have indicated that competition was more effective in enhancing performance. Problems such as selection bias, too few studies included in a review, and failure to address moderating or mediating variables have led to these contradictory conclusions. Consequently, Johnson, Maruyama, Johnson, Nelson, and Skon (1981) conducted an in-depth meta-analysis on 122 studies beginning in the 1920s for the purpose of clearing up these inconsistencies. Their results indicated the following: (1) intragroup cooperation was superior to intragroup competition and/or individualistic behavior; (2) intragroup cooperation without intergroup competition was superior to intragroup cooperation with intergroup competition in terms of productivity and performance; (3) there was no difference between interpersonal competition and individualistic goal structures in terms of productivity.

In addition to these findings, several moderating results were noted. First, it was concluded that the smaller the group, the greater was the superiority of cooperation over competition. Second, only those studies that used an interdependent task found clear superiority for cooperation.

Cotton and Cook (1982) and McGlynn (1982) criticized the Johnson et al., (1981) conclusions for being too simplistic and for not taking into account some of the factors which have been shown to modify the impact of cooperation and competition. Some of these

modifying variables include task interdependence, task complexity, and group size.

The notion of task interdependence is extremely important to understanding the relationship between cooperation and performance and between team cohesion and performance. Research by Miller and Hamblin (1963) and Goldman, Stockbauer, and McAullife (1977) has demonstrated that high means-interdependent tasks require cooperation, while low means-interdependent tasks do not. Although some might argue that sports such as bowling, golf, and archery might be considered low means-interdependent and thus require no cooperation for achievement to occur, I strongly disagree. All teams, regardless of the sport, possess a certain degree of interdependence or they could not be considered teams. And, although coacting sports such as bowling, golf, and archery do not display the overt level of interaction observed in basketball, football, or volleyball, that does not imply that interdependence doesn't exist for these sports. For example, Johnson et al., (1988) discovered that individuals possessing positive goal interdependence (the degree to which one perceives they can achieve their goals only if those who they are cooperatively linked with also achieve their goals) and positive resource interdependence (the degree to which one perceives they can achieve their goal only if those they're cooperatively linked with provide needed resources) outperformed individuals who did not have these characteristics. In sports such as league bowling, it is common for teammates to communicate with

each other and provide performance feedback and reinforcement; to establish roles (i.e., lead-off & anchor positions); devise strategies against opponents and challenging lane conditions; and set performance goals. All these factors contribute to the level of interdependence a team may display throughout the course of a competitive season. Thus, one might hypothesize that sport teams who are given cooperative performance goals or team goals, regardless of the sport in which they are participating would perform better than sport teams who do not have any performance goals.

Summary

The use of goals as an effective means of enhancing task motivation and performance has been well documented over the past two decades in both academic and organizational settings. The primary focus in the academic setting has generally been on determining the effectiveness of cooperative and competitive goals on learning performance, with results supporting cooperation in high means-interdependent tasks and competition in low means-interdependent tasks. The primary focus in the organizational setting has been on goal clarity and goal difficulty, with the majority of the research demonstrating that a specific, difficult and challenging goal is more effective in increasing performance than a simple and vague goal.

In sport, researchers have attempted to demonstrate the robust and replicable nature of goal setting, however results have proven

equivocal. Problems such as spontaneous goal setting, inability to control for performance feedback, intragroup competition, and lack of participant commitment have all led to confounding results. However, researchers and coaches continue to espouse the principles of goal setting as a useful strategy to increase sport and exercise performance.

The problem lies in the lack of sport research focusing on team or group goals. While researchers have suggested that the concepts of individual goals are applicable to group goals, empirical support for this notion has yet to be investigated in sport. To date, virtually all of the goal setting in sport research has concentrated on the individual rather than the group, thus questioning how effective group goals are in influencing performance in sport. And if they are effective, are they as effective as individual goals? Therefore, it is another purpose of this investigation to determine the influence of individual and team goals on team bowling performance. Specifically, it is hypothesized that individual and team goals will influence team bowling performance more than do-your-best goals.

The Relationship Among Cohesion, Cooperation and Goal Setting

Presently, the link between cohesion, cooperation, and goal setting is for the most part an anecdotal one. With the exception of Sherif and Sherif's (1953) classic "Robbers Cave" experiment in which intragroup cooperation was found to increase group cohesion, social scientists have hypothesized about the effects of cooperation on cohesion without demonstrating much empirical support. One of

the earliest attempts at linking cooperation with cohesion came from Deutsch (1949) who suggested that cooperation leads to increased friendliness (i.e., social cohesion) and greater group functions--defined as any actions of the group that are directed toward task solution. Simply stated, there will be a greater degree of cohesiveness in cooperative groups than in non-cooperative groups. More recently, Cox (1986) has stated that cooperation between team members can lead to mutual benefits, increased performance and team cohesion. Similarly, Cartwright and Zander (1968) in their work with groups, suggested group goals are the primary ingredients necessary to enhance performance, create personal satisfaction of members, and raise group morale. Finally, Carron (1984) has stated that one way to increase cohesion in teams is to establish a high norm for productivity by setting up specific, quantitative, and challenging team goals.

It is interesting that many practitioners believe that a cohesive team will be a successful team and take purposeful actions to enhance team cohesiveness such as creating a team identity, developing appropriate goals, selecting significant players to be team leaders, and identifying and clarifying performance roles. However, when investigating the body of literature on cohesion, empirical support for the methods employed by sport practitioners has not been demonstrated. In fact, the majority of studies have attempted to demonstrate a correlational relationship between cohesion and performance outcome and/or satisfaction. Few, if any

studies have attempted to isolate potential sources or ingredients of cohesion (e.g., group goals; various leadership styles, team longevity; or adversity) to determine if they positively influence cohesion and/or performance. Intuitively, one may think that if cohesion leads to performance success, and group goals are a part of cohesion, then group goals should be more of an influence on cohesion and performance than individual goals. For example, establishing a team goal in sport can create an immediate sense of purpose for a team in which the atmosphere turns from "me" to "we." Intra-team communication might be enhanced as team members grow to rely on one another for performance feedback, support, encouragement, and reinforcement. Consequently, cohesiveness should increase once a team goal is introduced, provided all teammates accept the team goal and concentrate on it every time they perform.

Conversely, an individual goal is designed specifically to increase one person's performance rather an entire team. This may lead to a "me" vs "we" outlook and thus an individual may be likely to focus solely on their own performance needs rather than their team. In fact, it would not be unlikely for teammates with individual goals to root aganst each other during performance, especially if they are competitive in nature. Thus, cohesion might be less in this situation, with teams reflecting little in intra-team communication, positive feedback, and encouragement from one performance to the next.

Summary

The relationship between cohesion, cooperation, and goal setting is for the most part an anecdotal one, with few studies attempting to systematically investigate the influence of individual and cooperative goal structures on cohesion and performance. Nevertheless, the inference that group goals are a vital prerequisite to developing and enhancing cohesion is a strong one. Therefore the final purpose of this investigation is to determine the influence of individual and group or team goals on cohesion. Specifically, it is hypothesized that team goals will lead to higher levels of task cohesion (ATG-T; GI-T) and social cohesion (ATG-S; GI-S) than either individual goals and do-your-best goals.

Youth Sport Research in Sport Psychology

Physical activity is one of the most prevalent and important behaviors observed in children and youth (Gould & Weiss, 1987). Every child participates in some form of physical activity whether it is organized sport, informal play, or exercise. Recognizing this importance has led investigators to examine the cultural, environmental, and personal factors that affect children's participation in performance of physical activities, as well as how participation in various physical activity forms affects the child's social, psychological, and motor development (Gould & Weiss, 1987).

A major finding of youth sport research is that children are very different from adults. As a child grows and develops, a variety of cognitive, socio-emotional, and physiological changes occur that

directly affect the acquisition and performance of physical skills in children and youth. Therefore, models used to guide behavioral research on adults are not the most appropriate to use in studying children. To understand the child's involvement in physical activity, sport and exercise scientists must understand these developmental changes and their ramifications.

Although interest in studying the developmental aspects of children involved in physical activity has increased in recent years, the major focus of sport psychology research continues to be the adult, rather than the child or youth. In fact, a perusal of the two most popular journals in sport psychology (Journal of Sport and Exercise Psychology, The Sport Psychologist), revealed only a handful of studies focusing on youth sports. Of the youth studies conducted, the most popular theme appeared to be participation motivation and attrition in youth sport (Klint & Weiss, 1987). According to Passer (1981), there are six general categories that participation motivation research has identified: affiliation; skill development; excitement/challenge; success/status, fitness, and energy release.

According to Gould and Weiss (1987), a need persists to review and integrate the behavioral science research on the child and physical activity. In reviewing the youth sports literature and offering recommendations for future research, Gould (1982) cited the asking of questions that have practical importance as one characteristic of good sport research. Although the intent of this

investigation is not to determine the participation motivation of youth bowlers, the asking of whether or not cohesion and performance are positively related in youth bowling is a question of both practical and research importance.

For example, from a practical perspective, understanding the relationship between cohesion and performance in youth sports can help to establish a sports environment that can focus on the positive aspects of team sport involvement such as cooperation and communication, social affiliation, trust, responsibility and team building rather than on competition and winning at all costs.

From a research perspective, asking the question of whether cohesion and performance are related and if so how, can help us understand what cohesion actually means in youth sports and whether it can enlighten the sport experience for youth participants. It may also help answer other valid questions such as why children participate in sport and how can sport practitioners keep children in sport?

Summary

The use of both individual and group or team goals has been well documented outside the sporting world and although these variables have been anecdotally linked to cohesion and performance in sport, empirical data on cohesion, goal setting and performance in youth sports are lacking. Therefore, the primary purpose of this investigation is to examine the influence of individual and team goals on cohesion and performance in youth bowling. Specifically, it

is hypothesized that both individual and team goals will enhance bowling performance more than do-your-best-goals; and team goals will increase the level of task (ATG-T, GI-T) and social cohesion (ATG-S, GI-S) more than individual goals or do-your-best goals. The secondary purpose of this investigation is to investigate the cohesion-performance relationship. Here it was hypothesized that cohesion and performance are positively related. More specifically, there will be a stronger relationship between task cohesion (ATG-T, GI-T) and team bowling performance outcome than between social cohesion (ATG-S, GI-S) and team bowling performance outcome.

CHAPTER III

METHOD

Subjects

Participants in this study were 131 youth bowlers (99 males & 32 females) on 39 teams (18 boys teams, 8 girls teams, and 13 co-ed teams). Each team consisted of 3 to 4 members from 5 different leagues in two bowling centers in Greensboro, North Carolina. Subjects were predominantly white from middle class backgrounds. Ages ranged from 10-15 years with a mean of 12.8 for the boys, 13.1 for the girls and a sample mean of 12.9 years. All 5 leagues lasted 30 weeks and were divided into three separate seasons of 10 weeks each. At the beginning of the second and third season, team performance statistics (i.e., win-loss record & team pin fall) reverted back to zero because a new league was starting, while individual bowling averages remained cumulative from the first week of bowling until the thirtieth week. To control for ability differences each league employed a handicap of 80%. Because bowling average is a strong indicator of ability in bowling, handicaps allow the differences in average (e.g., ability) to be reduced by the percent of handicap employed. Therefore, by utilizing an 80% handicap, it allows average differences to be reduced by 80%, and thus serves as an adequate control of ability differences.

Handicaps were determined by calculating a percentage of the difference (i.e., 80%) between opposing team's total averages and

then giving that difference to the team with the lower average for each game bowled. For example, if team "A" has a total average of 500 and team "B" has a total average of 400, the difference would be 100. Thus, team "B" would receive 80% of that difference or 80 pins per game added onto their total score for each of the three games bowled in a match with team "A".

Design

At the beginning of the second 10-week bowling season, all teams were randomly assigned to one of the following three goal setting conditions: (a) individual goal; (b) team or group goal; or (c) do-your-best goal. To investigate the differences in cohesion among goal conditions, a 3 x 3 (goal condition x early, mid, & late season trials) MANOVA with repeated measures on the trials factor was conducted with the four Group Environment Questionnaires (GEQ) scales (Attraction to Group-Task (ATG-T), Attraction to Group-Social (ATG-S), Group-Integration-Task (GI-T), Group-Integration-Social GI-S) as dependent variables. To investigate the differences in performance among goal conditions a 3 x 2 (goal condition x mid & late season trials) MANOVA with repeated measures on the last factor was conducted with the two performance variables (win totals & team bowling averages) as dependent variables.

To investigate the cohesion-performance relationship, a series of multiple regression analyses were employed. The first regression analysis used the four early season measures of cohesion (ATG-T, ATG-S, GI-T, & GI-S) as predictors of mid and late-season win

totals. The second analysis used the four mid season measures of cohesion as predictors of late season win totals.

Goal Setting Treatment Conditions

The first 10-week bowling season (30 games) provided a baseline from which to establish a criterion for a hard, challenging, and realistic goal. In addition, this procedure was used to decrease total variability of bowling averages by eliminating the beginning improvement scores. The improvement rate for all individuals and teams participating in the study from week 1-10 was 3.76 pins. Therefore, it was decided that an 8-pin improvement over the second 10-week, 30-game block would meet the criteria established by Locke et al., (1981) as a hard, challenging, and realistic goal. Goals were assigned at the start of the second 10-week block by conferring individually with each team in the gallery which is located behind the bowling approach area. Teams were instructed not to discuss their goals with their opponents. At the beginning of each week, the chief experimenter would verbally remind each participant of their goal and then discuss the following information with them: (a) present team record; (b) individual and team bowling averages; (c) number of games bowled; (d) games needed to bowl; and (e) how near or far they were toward reaching their goal. Moreover, to reinforce the goal manipulation and commitment of each subject involved in the study, all participants were given a weekly written statement reminding them of the verbal information presented above. Finally, the chief experimenter would observe all weekly

bowling performances and make sporadic and informal checks both during and after the bowling matches to make sure that participants knew their goal without having to be reminded and that they were aware of their present and seasonal performances in relation to their goal.

Individual Goals. Subjects in this condition met on an individual basis with the chief experimenter and were given a goal of improving their baseline average by 8 pins or more over a 10-week, 30-game period.

Team Goals. Teams in this condition met as a team with the chief experimenter and were given a goal of improving their baseline team average by 8 pins over a 10-week, 30-game period.

Do-Your Best-Goals. This group served as a control. Participants in this condition met as a team with the chief experimenter and were not given a numerical goal. Instead, they were simply told to do their best.

Measures

Cohesion Assessment

Team cohesion was measured five minutes prior to bowling during weeks 1, 5, and 10 of the second 10-week season with the Group Environment Questionnaire (GEQ) (see Appendix F). Because the GEQ is designed primarly for adults or college age athletes, some modifications were made to simplify the wording to the following questions: 2, 7, 8, 10, 11, 14, 15, and 18 For example, question 14 originally read "Our team members have conflicting aspirations for

the team's performance." It was simplified to read, "Our team members have different goals for our team's performance." Similarly, question 18 originally read, "Our team members do not communicate freely about each athlete's responsibilities during competition or practice." It was simplified to read, "Our teammates do not talk to each other about bowling during the game or practice." These changes are the result of suggestions made by two youth bowling directors and several parents whose children are participating in the Greensboro Youth Bowling Program. (See Appendix G for all the modifications to the GEQ).

The GEQ is based on a conceptual model in which cohesion is viewed as a multidimensional construct comprising individual and group aspects, each of which has a task and social orientation (Carron, Widmeyer, & Brawley, 1988). It was developed from student, athlete, and professional input, along with a literature search from 29 different articles and studies on the topic of cohesion. All the responses from the four phases of inquiry were collapsed to form a "response pool" representing information regarding four constructs of cohesion: (a) individual attractions to group-task (individual team member's feelings about their personal involvement with the group task, productivity, goals, and objectives) (ATG-T); (b) individual attractions to group-social (individual team member's feelings about personal involvment, desire to be accepted, and social interaction with the group) (ATG-S); (c) group integration-task (individual team member's feelings about the

similarity, closeness, and bonding within the team as a whole around the group's task) (GI-T); and (d) group integration-social (individual team member's feelings about the similarity, closeness, and bonding within the team around the group as a social unit) (GI-S). Although the four scales of the GEQ are modestly correlated, (.29 to .42), which is consistent with the constructs proposed in the model, recent theorizing and empirical findings have suggested that distinctions should be made between the four constructs when examining the nature of team cohesion (Brawley, Carron, & Widmeyer, 1988; Carron et al., 1988).

Overall validity was determined through a battery of studies concerning the inspection of the GEQ's content, concurrent, predictive, and construct related validities. Content validity was assured through a protocol which required an 80% agreement among a series of five investigators for each of the 354 original statements. The GEQ was ultimately reduced to 18 items that were broken down in the following manner: 4 items in ATG-T; 5 items in ATG-S; 5 items in GI-T; and 4 items in GI-S. Questions are on a 9-point scale, anchored at the two extremes by "strongly agree" and "strongly disagree." The score on any specific scale is computed by obtaining the mean response for a subject from the pertinent items. A representative score for the total team is then derived by determining the mean response for all subjects tested in a given group.

Concurrent validity was determined by the degree to which the GEQ corresponded with similar measures (i.e., Sport Cohesiveness Questionnaire, Martens, Landers, & Loy, 1972; Team Climate Questionnaire (TCQ), Carron, 1986; Grand & Carron, 1982; and a Sport-modified Bass Orientation Inventory (SBOI), Ball & Carron, 1976; Bass, 1962). Predictions about the correspondence between the scales of the GEQ and those of the other instruments mentioned above were made on the basis of what the GEQ was developed to measure and what the sport literature suggested was assessed by other instruments (Carron, Widmeyer, & Brawley, 1985). Results indicated that the Group Integration scales (GI-T & GI-S) correlated moderately well with measures of group perception (SCQ) for both the individual and team sport athlete ($r = .41$, $p < .05$ and .47, $p < .001$, respectively, for GI-T and $r = .62$, $p < .001$ and .47, $p < .001$, respectively, for GI-S). In addition, the two GEQ task scales (ATG-T; GI-T) were strongly related to the TCQ's measure of role involvement for both the individual and team sport athlete ($r = .58$, $p < .001$ and $r = .40$, $p < .01$, respectively, for ATG-T and $r = .63$, $p < .001$ and $r = .49$, $p < .001$, respectively, for GI-T.

As a result of these findings, it was revealed that the GEQ was significantly correlated with other measures of the same construct at a level expected of a unique, but related measure. The predicted absence of the GEQ correspondence with measures of different constructs was also clearly supported by the majority of results (Brawley, Carron, & Widmeyer, 1987).

The method used by Carron et al., (1985) to examine predictive validity was to consider the ability of the GEQ to accurately classify subjects into their natural groups with the consensus being that team members' responses to the GEQ would reflect the cohesion associated with their type of sport group or team relationship (duration of team membership). Thus, it was predicted that interdependent teams would possess greater levels of task cohesion, while social cohesion would be determined in accordance with team longevity. That is, teams competing together for 3 or more years would score higher on the social scales of the GEQ than teams participating together for under 3 years. Results indicated that the GEQ accurately classified 74% of the athletes in terms of task characteristics (ATG-T; GI-T) and 62% of the athletes by means of the social scales (ATG-S; GI-S).

In terms of construct validity, task cohesion scales were found to stimulate sufficiently extreme responses to obtain the predicted outcome of athletes of high and low perceived task cohesion (Brawley et al., 1987).

Reliability was assessed with respect to internal consistency through various analytical procedures. Two studies by Carron et al., (1985) were undertaken with subjects of heterogeneous characteristics. Results from a Cronbach's alpha indicated similarities between studies for all four components of the GEQ. For instance, alpha coefficients from studies 1 and 2 were .74 and .65

for ATG-T; .58 and .64 for ATG-S; .78 and .71 for GI-T; and .61 and .72 for GI-S, respectively.

More recently, Frierman et al. (1991) attempted to provide support for the Carron et al., (1985) results and measured the equivalence (i.e., internal consistency) by examining the covariance among all the items of each of the four GEQ scales. With the exception of the ATG-S scale distributed in the early season (.35) and midseason (.48), all scales revealed a moderate (.64) to high level of internal consistency (.81) during early, mid, and late season.

By virtue of these studies, it appears that the GEQ is both a valid and reliable cohesion assessment instrument. However, Brawley et al., (1987) have suggested that future studies should be conducted using the GEQ to assess cohesion and its relationship to other variables.

Because certain changes were made to some of the questions from the GEQ, a reliability analysis was performed to determine intrascale equivalence. The results are discussed in the beginning of the results section and alpha coefficients are presented in Table 1.

Performance Assessment

Performance was measured at the conclusion of weeks 5 and 10 of the second 10-week season and operationally defined in two ways: (a) team win totals and (b) team bowling averages. Win totals at week 5 were determined by the number of wins accumulated from week 1 to week 5, while win totals at week 10 were determined by

the number of wins accumulated from week 6 to week 10. Team bowling averages for week 5 were determined by dividing the total number of pins accumulated from week 1 to week 5 by the number of games bowled by each team during that period. Team bowling averages for week 10 were determined by dividing the total number of pins accumulated from week 6 to week 10 by the number of games bowled by each team during that period. In both instances, each team bowled 15 games from week 1 to week 5 and 15 games from week 6 to week 10.

Goal Questionnaire

A 5-item questionnaire assessing individual perceptions of goal difficulty, confidence, effort, reality of goal, and goal acceptance was administered independently to all teams after goals were assigned in week 1. Questions were anchored on a 7-point scale with 1 indicating not at all and 7 indicating very much (see Appendix A). This questionnaire is identical to the one used by Frierman et al. (1990) and Weinberg et al. (1985).

The purpose of the goal questionnaire was to obtain some descriptive information about how the teams in each of the three goal conditions perceived their goal. This questionnaire also served to determine if any between group differences existed in how hard the children in the goal groups tried; if they believed in their goal; and if they thought they were going to achieve their goal. Moreover, the responses to the various questions provided potential insight into the effectiveness of the goal manipulation. For example, Locke

has (1968; 1984) suggested that in order for a goal to be effective in enhancing performance it must be accepted, be realistically difficult, and it has to elicit a high degree of effort and desire to achieve. Asking questions that pertained to effort, acceptance, difficulty, and reality of the assigned goal provided information about whether the goal manipulation satisfied the criteria for effectiveness cited by Locke (1968; 1984).

Weekly Goal-Performance Update Sheet

A separate goal sheet was also distributed on a weekly basis, informing each individual and team of their present goal, their average during each of the 10-week goal periods, and how near or far they were toward reaching their goal. As a manipulation check, a question was also asked regarding whether or not participants have any other goal(s) (see Appendix B).

Cohesion-Goal Questionnaire

Because goals were being experimentally manipulated to determine their influence on cohesion and individual and team bowling performance, it was important to obtain some exploratory data regarding how individuals and teams perceive their goals as a strategy to enhance bowling performance, task cohesion, and/or social cohesion. It was the intent of this questionnaire to gain some insight into the relationship between cohesion, goals, and performance in youth bowling. Specifically, how did individuals and teams view their goal? Did they think it was an important part of bowling well? Did they think it was an important part of winning

and/or creating task and social cohesion? How often did they concentrate on their goal and how often did they talk to their teammates about their goal? Therefore, at the conclusion of the study, all youth bowlers were asked to answer an 18-item questionnaire to determine if they perceived their goals to be helpful in influencing individual and team performance as well as task and social cohesion. However, due to time constraints in which the bowlers had to leave the premises directly after finishing their final game, only the following two questions were answered by all teams: (1) During the 10 weeks, I concentrated _____% of the time on my team goal and (2) I spoke to my teammates about my team goal _____% of the time. Each question was anchored from 0% to 100% with intervals of 10% (see Appendix C).

Procedures

One month prior to the start of the fall season, two separate meetings were held with the youth bowling directors, bowling coaches and league coordinators to discuss the nature of the study and get approval to speak with the parents and children participating in the youth bowling program. Three weeks later and one week prior to the first 10-week bowling season, all six leagues scheduled a pre-season meeting to discuss standard bowling league protocol (e.g., yearly sanction & weekly bowling fees, league rules & bowling format). Informed consents (see Appendix D) and a brief summary (see Appendix E) of the purposes and procedures of the study were distributed to the parents and children who attended the meeting.

Parents and children were instructed to return the informed consent on the first week of bowling if the children were interesed in participating in the study. Individuals and teams who did not attend the meeting, but planned to bowl in the league were also given an informed consent and a brief summary of the purposes and procedures of the study upon their first arrival to the bowling alley. Once all teams had been formed, a total of 60 teams spanning 5 leagues were contacted and given a consent form of which 52 teams returned by the first bowling week and thus, expressed interest in participating in the study. That left a total of 8 teams who either did not return their consent for or did not show up for the start of the league. These 8 teams were immediately dropped from this investigation.

During the league meeting, children voluntarily selected their teams as well as their team captains. Upon the conclusion of the meeting, it was determined that each team would bowl three games each week for 30 weeks, with each league divided into three separate leagues of 10 weeks each. In each of the three leagues, team trophies would be distributed for first and second place and individual trophies would be given for high average, high series, high game and most improved for both males and females. The first 10 weeks served primarily as a bowling instruction period in which the chief experimenter of this study also served as the only bowling instructor in three of the five leagues participating in the study. In the other two leagues involved in this study, the chief experimenter

worked with two other bowling instructors, both of whom helped in reminding participants about their goals, in addition to helping distribute and collect cohesion and goal questionnaires. In addition, the first 10-week bowling period served as a baseline to establish bowling averages for which realistic individual and team goals were determined. Finally, the first 10 weeks provided an opportunity for the children to get to know their teammates, opponents, and familiarize themselves with the rules and regulations of league bowling (i.e., foul lights, alternating lanes). Moreover, it allowed the chief experimenter the opportunity to develop a sense of trust and establish a positive rapport with the family members and children involved in the study. This would help to facilitate the process of understanding and accepting assigned goals and filling out necessary questionnaires during the second 10-week bowling season.

The second 10-week bowling season was broken down into three segments from which cohesion and performance data were obtained: (a) weeks 1 to 4 (early season); (b) weeks 5 to 9 (mid season); and (c) week 10 (late season). Individual bowling averages that were established during the first 10-week bowling season were used to establish team handicaps for the first week of the second season, but total team pin falls and win totals reverted back to zero. Most important, there was no bowling instruction during this period.

Wins were determined by a weekly 4-point system, with each team receiving one point for each game victory against their

opponent and one point for the team with the highest total series pin fall (sum of three games, including handicap). Each league provided a weekly standings sheet that positioned teams in hierarchical order from most to least wins.

Any participants who missed a week of bowling were allowed to make up their games within one week prior to the day of their absence, provided they notified their league coordinators to establish an available make-up day. Out of 131 youth bowlers participating in this study, five bowlers notified their league coordinators and made up a missed week of bowling within five days of their absence. For those bowlers who missed a week and did not make up their games (n=17), their seasonal averages were substituted into their team's score for that week. Subjects who were absent during a week that questionnaires were distributed (weeks 1, 5, & 10) filled them out on the first week that they returned (n=12). Any subjects who missed two or more weeks and who failed to make up any missed games were omitted from the study along with their entire team. A total of 13 out of 52 teams or 25% of the original subject population either missed consecutive weeks, failed to make up missed games and/or quit the league, and thus, were dropped from the study. This left a final total of 39 teams who actively participated in this investigation, adhering to all the procedures and protocol outlined in the above section.

CHAPTER IV

RESULTS

Because the purposes of this study were to examine the influence of individual and team goals on team cohesion and performance as well as investigate the cohesion-performance relationship, all analyses were conducted with the team as the unit of reference rather than the individual. The one exception was the use of individual data to investigate the reliability of the modified version of the GEQ. Team data were obtained for team bowling averages, cohesion questionnaires and goal questionnaires by adding the individual scores of each team member to establish a team sum and then dividing the team sum by the number of participants on each team to create team means for all of the dependent variables used in this study.

Reliability of the Modified GEQ

To assess reliability with the original Group Environment Questionnaire (GEQ) Widmeyer et al. (1985) advocated and used measures of internal consistency. Thus, the method used to examine the reliability of the modified version of the GEQ in this study was to determine the internal consistency of each of the four scales and to examine item-total correlations to identify weak items. Results indicated that all four scales revealed a moderate (.52) to moderately high level (.78) of internal consistency. However, individual item-total correlations indicated that question 1 from

the ATG-S scale and question 14 from the GI-T scale were poorly correlated with the other items in their respective scales. Thus, they were omitted from the ATG-T scale and the GI-S scale in order to increase the alpha coefficients for both scales. Consequently, two new scales were created without question 1 from the ATG-S scale and without question 14 from the GI-T scale. (Table 1 displays the internal consistencies of the modified GEQ). (See Appendix H for individual item analysis of the modified GEQ). It is important to note that all analyses investigating cohesion (i.e., cohesion-performance relationship; goal condition differences in cohesion; gender differences in cohesion) utilized the original measures of ATG-T and GI-S and the more reliable versions of ATG-S and GI-T.

Table 1

Internal Consistency of the Modified GEQ

Scales	Early Season	Mid Season	Late Season
ATGT	.6130	.6962	.5408
ATGS (modified)	.6628	.5810	.6921
GIT (modified)	.5962	.5197	.6633
GIS	.7316	.7201	.7782

Influence of Gender on Cohesion

Although the investigation of gender differences in cohesion was not a purpose of this study, literature suggests that gender influences social behavior (e.g., Eagly). A preliminary analysis was conducted to determine if gender differences existed on the four cohesion scales during early, mid, and/or late season. As a reminder, gender was operationalized as male, female and co-ed teams. Of the 39 teams participating in the study, there were 18 male teams, 8 female teams, and 13 mixed or co-ed teams. To determine if gender differences existed on the four GEQ scores, a 3 X 3 (Gender X Trials) MANOVA with repeated measures on the last factor was conducted on the four GEQ scores. The results indicated no significant multivariate main effect for gender, $F(8,66) = 1.87$, $p = .079$, and no interaction, $F(16,211) = 1.17$, $p = .293$, or trials effect, $F(8,138) = 1.37$, $p = .215$, reached significance. However, inspection of cohesion means indicated female teams had slightly higher perceptions of task cohesion (ATG-T, GI-T) and social cohesion (ATG-S, GI-S) than either male teams or mixed teams. Because these differences were nonsignificant and because male, female, and co-ed teams were distributed across goal conditions, gender was not considered further in the analyses. Cohesion means and standard deviations for gender are provided in Table 2.

Table 2

Cohesion Means and Standard Deviations for Gender

	Early Season		Mid Season		Late Season	
	M	SD	M	SD	M	SD
Team Gender						
Male						
ATG-T	31.29	3.29	31.76	3.27	32.56	2.61
ATG-S	27.75	4.37	27.34	4.97	26.61	5.11
GI-T	28.32	4.44	29.14	5.11	29.74	4.92
GI-S	24.46	6.49	25.62	5.99	27.03	5.05
Female						
ATG-T	31.72	5.04	31.00	5.20	34.27	1.82
ATG-S	30.47	4.89	29.30	4.24	30.71	4.14
GI-T	30.28	3.04	30.61	2.98	32.74	3.96
GI-S	27.55	4.72	27.71	5.43	26.93	6.45
Coed						
ATG-T	29.96	6.71	30.42	5.51	29.78	4.64
ATG-S	25.93	6.53	25.30	5.51	24.49	5.81
GI-T	26.26	7.00	26.91	5.23	25.79	6.64
GI-S	21.09	7.85	20.47	5.29	18.79	7.31

Influence of Goals on Cohesion

The primary purpose of this investigation was to examine the influence of individual and team goals on cohesion and performance in youth bowling. To determine the influence of goal conditions on cohesion, a 3 X 3 (Goal Condition X Trials) MANOVA with repeated measures on the last factor was conducted on the four GEQ scores. No significant multivariate or univariate goal group main effect was found, $F(8,66) = 1.77$, $p = .098$, and no interaction, $F(16,211) = 1.19$, $p = .28$, or trials effect, $F(8,138) = 1.20$, $p = .30$, reached significance for the four GEQ scales. Cohesion means and standard deviations are provided in Table 3.

Influence of Goals on Team Bowling Performance

The second part of the primary purpose of this investigation was to examine the influence of individual and team goals on performance. To determine if there were any initial differences in performance among goal groups, a one-way ANOVA was conducted comparing the three goal groups on baseline team bowling averages. Results revealed no between group differences, $F(2,36) = .59.$, $p = .56$, and thus a 3 X 2 (Goal Condition X Trials) MANOVA with repeated measures on the last factor was conducted on team bowling averages and win totals. The results indicated a significant multivariate main effect for goal condition, $F(4,70) = 3.02$, $p < .02$. In addition, a significant trials effect was also found, $F(2,35) = 6.39$, $p < .004$, however, no significant goal group x trials interaction $F(4,70) = .20$, $p = .94$, was found. Follow-up univariate analyses

indicated a significant goal condition main effect, $F(2,36) = 6.17$, $p < .005$, for team win totals, but not team bowling averages $F(2,36) = .46$, $p = .63$. A Tukey post hoc comparison indicated that both the team goal condition (M=24.15) and the individual goal condition (M= 23.23) won significantly more games than the do-your-best goal condition (M=17.69). Univariate analyses also revealed a significant trials effect for team bowling averages, $F(1,36) = 7.09$, $p < .001$, but not team win totals $F(1,36) = .46$, $p = .50$, with team averages significantly improving from weeks 1-5 (111.14) to weeks 6-10 (114.02). Means and standard deviations for team bowling averages and win totals are provided in Table 4.

Table 3

Cohesion Means and Standard Deviations for Goal Conditions

	Early Season		Mid Season		Late Season	
	M	SD	M	SD	M	SD
Goal Condition						
Team						
ATG-T	31.35	3.92	32.83	3.71	33.12	2.80
ATG-S	28.38	5.83	29.06	4.48	27.56	5.26
GI-T	28.37	7.00	29.89	5.30	27.88	7.38
GI-S	25.64	5.49	26.72	5.09	27.21	5.10
Individual						
ATG-T	30.30	4.41	29.96	4.30	31.19	4.10
ATG-S	27.20	5.66	24.42	5.63	25.86	5.72
GI-T	28.44	4.27	29.66	4.12	30.88	3.65
GI-S	24.08	9.02	23.59	6.44	23.21	7.58
Do-Your-Best						
ATG-T	31.16	6.43	30.68	5.03	31.66	3.93
ATG-S	27.53	5.03	27.71	4.31	26.82	5.90
GI-T	27.30	4.57	26.54	4.80	28.36	5.94
GI-S	22.19	5.86	22.68	6.72	22.38	7.98

Table 4

Means and Standard Deviations for Team Bowling Averages and Win Totals

	Mid Season Week 1-5		Late Season Week 6-10	
	M	SD	M	SD
Goal Condition				
Team	115.10	17.22	116.71	19.43
Individual	110.71	12.11	113.94	14.72
Do-Your-Best	111.14	16.85	114.02	17.33

	Mid Season Week 1-5		Late Season Week 6-10	
	M	SD	M	SD
Goal Condition				
Team	12.46	2.76	11.70	2.46
Individual	11.92	3.12	11.31	3.12
Do-Your-Best	8.85	3.44	8.85	4.54

Cohesion-Performance Relationship

The second purpose of this investigation was to investigate the cohesion-performance relationship with youth bowlers. In line with recent research examining cohesion and its relationship to a variety of different variables (i.e., self-efficacy, group size, sport performance), a series of multiple regression analyses were employed. The first set of regression analyses used the four early season (week 1) measures of cohesion (ATG-T, ATG-S, GI-T, GI-S) as predictors of mid season (week 5) and late season (week 10) performance outcome (win totals). Results indicated that the four cohesion measures predicted only 10% of performance outcome in mid season and 16% of performance outcome in late season. None of the four cohesion scales were significant predictors of performance outcome in mid season or late season (See Table 5).

The final regression analysis used the mid season (week 5) measures of cohesion to predict late season performance outcome (win totals in week 10). Results indicated that the four mid season cohesion measures predicted 19% of performance outcome in late season. Once again, none of the cohesion scales were a significant predictor of performance outcome (See Table 6).

Table 5

Multiple Regression Analysis Predicting Mid and Late Season Win Totals from Early Season ATG-T, ATG-S, GI-T & GI-S Cohesion

	Week 5		Week 10	
Predictors	r with Wins	Beta	r with Wins	Beta
ATG-T	.02	.03	-.20	-.21
ATG-S	-.22	-.40	-.22	-.12
GI-T	.06	.25	.10	.36
GI-S	.11	.05	-.20	-.37
Multiple R =.32			Multiple R =.39	
R2 = .10, F(4,34) = .94, p = .45			R2 = .16, F(4,34) = 1.59, p = .32	

Table 6

Multiple Regression Analysis Predicting Late

Late Season Win Totals from Mid Season

ATG-T, ATG-S, GI-T & GI-S Cohesion

	Week 10	
Predictors	*r* with Wins	Beta
ATG-T	-.19	-.42
ATG-S	.21	-.34
GI-T	.13	.09
GI-S	.16	.54
Multiple R =	.44	

R2 = .19, F(4,34) = 2.03, p = .11

Goal Questionnaire

Fifteen minutes prior to performance in Week 1, all team members were asked to rate their perceptions of goal difficulty, confidence, level of effort, and reality and acceptance of the assigned goal. Questions were on a 1 to 7 point likert-type scale with 1 indicating not at all and 7 indicating very much (See Appendix A for Goal Questionnaire). A one-way ANOVA was conducted on each of the five questions and indicated no between group differences. However, the group means indicated that all three goal groups perceived their goal to be moderately difficult (M=3.63). They had a high degree of effort (6.72) and confidence toward achieving their goal (M=6.07), and they believed their goal to be very realistic (M=6.18). (See Table 7 for goal question means and standard deviations).

Table 7

Means and Standard Deviations for Goal Questionnaire

Question	Team	Individual	Do-Your Best	F	p
Difficulty	3.37	4.01	3.51	.65	.53
Confidence	6.24	5.97	6.00	.51	.60
Effort	6.71	6.88	6.58	1.19	.32
Reality	6.43	5.78	6.33	2.55	.09

In order to determine spontaneous goal setting, two questions were asked regarding degree of acceptance of the assigned goal and if subjects had any other goals. Although the entire sample indicated that they strongly accepted the assigned goal (M=6.44), 23% revealed that they set their own goals. Specifically, 38% of the team goal condition set individual goals; 1% of the individual goal condition set a team goal; and 23% of the do-your-best condition set either an individual or a team goal.

Post-Experiment Goal Questionnaire

In order to determine the degree to which each goal condition concentrated on their goal and conversed with their teammates about their goal the following two questions were asked: (1) During the 10 weeks, what percentage of the time did you concentrate on your goal?; and (2) What percent of the time did you speak with your teammates about your goal? To determine if there were any between group differences, a one-way analysis of variance was conducted on both questions. No significant effects were found, however, perusal of percent means for teams indicated the individual goal condition and the do-your-best goal condition concentrated on their goal more often than the team goal condition. In addition, the individual goal condition reported that they spoke to their teammates more than the team goal condition or the do-your-best condition. (Team percent means for goal concentration and intrateam goal communication are provided in Table 8).

Table 8

Percent Means for Goal Concentration and Intrateam Goal Communication

Question	Team	Individual	Do-Your Best	F	p
Concentration	66.9	80.0	72.9	1.08	.35
Communication	53.1	65.0	36.0	.59	.56

Summary

In summary, the purposes of this investigation were twofold: (a) to examine the influence of individual and team goals on cohesion and team performance in youth bowling and (b) to investigate the cohesion-performance relationship. Specifically, it was hypothesized that: (a) individual and team goals would enhance team bowling performance defined in terms of team win totals and team bowling averages more than do-your-best goals; (b) the team goal condition would have a higher level of task and social cohesion than the individual goal condition or the do-your-best goal condition; and (c) cohesion and performance would be positively related with a stronger relationship occurring between task cohesion (ATG-T, GI-T) and performance than between social cohesion (ATG-S, GI-S) and performance.

The results indicated that the individual and team goal conditions won significantly more games than the do-your best goal

condition over the 10-week bowling period, although their were no between group differences in team bowling averages throughout the 10 weeks. Results also indicated that cohesion and performance were not related and none of the four cohesion measures (ATG-T, ATG-S, GI-T, GI-S) in early season (Week 1) or mid-season were (Week 5) able to significantly predict team performance outcome (win totals) in mid-season or late season (Week 10).

Results from a series of univariate analyses of variance conducted on the five-item goal questionnaire revealed no between group differences for any of the questions asked once goals had been assigned. However, inspection of means for each question indicated that teams in each goal condition perceived their goal to be moderately difficult; tried hard to reach their goal; were confident that they could reach their goal; perceived their goal to be very realistic; and they accepted their goal. However, spontaneous goal setting did occur, with 38% of the subjects in the team goal condition, 23% of the subjects in the do-your-best goal condition and 1% of the subjects in the individual goal condition reporting that they set goals different from the ones that were assigned to them. Furthermore, a two-item post experiment goal questionnaire revealed the subjects in the individual goal condition concentrated more and communicated more with their teammates about achieving their goal than subjects in the team goal condition or the do-your-best goal condition.

CHAPTER V

DISCUSSION

The primary purpose of this investigation was to examine the influence of individual and team goals on cohesion and performance in youth bowling. In line with various theories on goal setting, it was hypothesized that both team goals and individual goals would enhance team bowling performance more than do-your best goals. The results from this investigation indicated that team goals and individual goals led to higher team win totals than do-your-best goals. Specifically, the team goal group won 24.15 games and the individual goal group won 24.23 games, while the do-your-best goal group won only 17.69 games out of a possible 40.

Although no previous research had investigated the influence of team goals on sport performance, the findings of this investigation provide partial support for the concepts espoused by Locke and Latham (1985), who suggested that the principles of individual goal setting can equally be applied to team goals. That is, a specific, difficult, and challenging goal, whether it is a team goal or an individual goal will increase performance more than a goal that is vague, unclear, and non-challenging. Although both numerical goal groups had higher seasonal win totals than the do-your-best goal group, suprisingly there were no significant between group differences in team bowling averages.

One possible explanation for the inconsistent findings regarding the relationship between goals and win totals and goals and team bowling averages is that the numerical goal conditions (individual goals & team goals) made winning and losing more salient than the do-your-best goal condition. By concentrating on either an individual goal or a team goal, performance may have become tied to outcome because reaching these goals would indicate at least an 8 pin improvement in individual or team averages, thus increasing the chances for a team to win a game or match. However, because an 8-pin improvement was not obtained in either numerical goal condition, it might lead one to believe that these goals should not have influenced team win totals. However, it is important to realize that team averages were analyzed based on a composite of bowling performance from weeks 1-5, weeks 6-10, and weeks 1-10 and does not show performance variability on a weekly basis. It is quite possible that the numerical goal groups could have bowled just enough to win most of the time, but could have gotten "blown out" when they lost, thus reflecting a high won-loss percentage and a relatively low team bowling average.

One possible explanation for the success of individual and team goals over do-your-best goals is the apparent feedback that accompanies numerical goals. According to Locke and Latham (1984), feedback is necessary in order to track progress toward desired outcomes (e.g., goal achievement & winning). When people are given information on how well they are doing in relation to some

expected standard, they can modify their behavior, if necessary, or continue their present course of action if it is shown to be effective. Teams receiving numerical goals had the luxury of always knowing how near or far they were toward their goal. This allowed them to stay focused on relevent and stable aspects of performance such as their own score, their teammates' score, and what performance demands would be necessary for goal success and or winning. In contrast, teams with a do-your-best goal had no apparent strategies for increasing their team bowling performance. Their goal dictated a reliance on effort rather than score, and thus, they were faced with a potential dilemma. Does bowling a high score always indicate doing your best? Or for that matter, does bowling poorly always mean lack of effort?

The results of this investigation yielded no performance differences between the team goal group and the individual goal group. In fact, the difference between the two groups over a 10 week period was only slightly less than one win (.931).

The question then becomes, should team goals or individual goals have worked better in increasing team performance in youth bowling? According to Locke and Latham (1984), group goals should work better when the task to be accomplished is interdependent, but if the task is not interdependent, individual goals should work best. Although bowling is generally referred to as an individual or coacting sport, league bowling is designed in a team style format. For example, each league establishes a quota that determines the

number of members allowed on a team. In addition, rules that determine handicaps are based on team averages rather than one person's individual average. Finally, winning is decided by the highest team pin fall, instead of an individual's bowling score.

Alternatively, league bowling may not be viewed as a "true" team sport because the task of bowling cannot be broken down into separate subtasks with each teammate relying on each other to complete the overall task. In addition, cooperation and coordination are not necessary prerequisities for performance success, whereas in true team sports such as basketball and volleyball, cooperation and coordination are extremely important factors. Thus, league bowling might be considered a sport that falls somewhere in between an individual sport and a true team sport. For example, bowlers do not have to interact with their teammates for the task to be accomplished. Nor do they have to set roles for themselves or for that matter even communicate with their teammates if they choose not to. In essence, all they have to do is bowl and that by itself can potentially facilitate performance, especially if a bowler has an individual goal to focus on. However, for bowlers who perceive bowling to be a team sport, it is quite common for them to establish roles such as a leadoff bowler who sparks the team by throwing strikes and an anchor bowler who is deemed reliable and can be counted on to perform well under pressure. In addition, these bowlers may communicate often to their teammates, making suggestions for how to bowl under certain lane conditions, provide

moral support and encouragement and keeping their teammates apprised of how near or far their team is in relation to their weekly opponent.

In summary, league bowling can be perceived as either an individual sport or a team sport, depending upon the motives of the participant. Because each bowler is required to perform the entire task of bowling without the physical help of their teammates, bowling can be viewed as an individual sport. However, because individual scores are combined to form a team score and the team score determines the weekly and seasonal winners, league bowling is very much considered a team sport.

It is quite possible that individual and team goals were interpreted in the same way, which led to similar behaviors such as focusing on individual performance rather than team performance, and lack of communication between team members. This finding can be supported by the fact that 38% of the team goal condition set their own individual goals, in addition to reporting almost identical patterns of task and social cohesion over the 10-week bowling period. Thus, it can be concluded that a true test between individual goal, team goal, and do-your-best goal conditions did not occur in this study and that better controls must be employed in the future to limit the frequency of spontaneous goal setting. However, an interesting paradox arises when attempting to control for spontaneous goal setting in a field setting. On the one hand, you need to control for subjects who set their own goals if you are to

achieve a true test of various goal structures. On the other hand, exerting too much control can limit the generalizability of the overall findings because the nature of the results may have been obtained in an unrealistic setting.

Conclusion

In conclusion, the results of this study partially support hypothesis one in that individual and team goals did enhance team win totals more than do-your best goals. However, total support of this hypothesis was not found because there were no between group goal differences in team bowling averages.

Part of the primary purpose of this investigation was to determine the influence of individual and team goals on task and social cohesion. Specifically, it was hypothesized that team goals would influence both task and social cohesion more than individual goals or do-your-best goals. The rationale behind this hypothesis was based on the landmark research conducted by Deutsch (1949), in addition to the more recent anecdotal explanations by Cox (1986) and Carron (1984) who believed that cooperation within teams and team goals would positively influence team cohesion.

The results indicated no between group differences in either task or social cohesion during early season (week 1), mid season (week 5), and late season (week 10). There are several possible explanations for this.

One factor that might have contributed to the lack of between group differences in task and social cohesion may have been the

ineffectiveness of the team goal manipulation to develop and enhance task and social cohesiveness over a 10-week period in the team goal condition. Based on the work conducted by Lott and Lott (1965), Tutko (1971), and Cratty (1981), the use of goals to develop team cohesion is only one principle of many that contribute to the development of team cohesion. Factors such as creating a sense of team pride or unity, having team members become acquainted and familiar with each other, letting team members become aware of their roles within the team, and highlighting areas of team success are all important in developing team cohesion when used in symphony. However, simply using only one principle as a source of enhancing cohesion may severely limit the possibility of developing and enhancing task and social cohesiveness. By employing only team goals to develop cohesion without combining it with some of the other principles mentioned above, may not have created a salient enough manipulation to develop and foster task and social cohesiveness over a 10-week performance period. Related to this is the availability of feedback associated with team performance. If setting a team goal is going to help develop cohesion, teammates must be able to obtain continuous feedback about their progress toward reaching their goal or the goal will not be effective in enhancing cohesion as time goes on. It is quite possible that the youth bowlers in the team goal condition had some difficulty in obtaining continous performance feedback about their goal. During weekly competition, each bowler's scores were reflected via an

overhead television screen located on each bowling lane. Although individual scores and team scores were displayed on the screen, bowlers with team goals may have had problems determining how near or far they were to their goal on a frame by frame basis during the bowling match because it would have required dividing their team score by the frame being completed and then comparing it to the team goal. Thus, they may not have concentrated on achieving their goal and instead focused on improving their own score and winning. This would help explain why there were between group differences in winning, but not in task or social cohesion.

Support for this explanation can be found in the two-item post-experiment goal questionnaire which assessed the degree to which each team concentrated on their goal and spoke to their teammates about their goal. The results indicated that subjects in the team goal condition concentrated only 67.9% on their team goal, in comparison to the subjects in the individual goal condition and subjects in the do-your-best goal condition who concentrated 81.5% and 80%, respectively. This might infer that trying to focus on a team goal was more difficult than either an individual goal and a do-your-best goal.

It is important to realize that the average age of the teams participating in the study was 13 years and the ability level was advanced beginner to intermediate. Subjects in the team goal condition probably found it more cumbersome to determine if they were on a pace to reach their team goal on a frame to frame basis,

especially when they were concerned about their own performance and winning the game. It is quite conceivable that at times they may have viewed their team goal as a burden and instead focused on their own performance.

Another possible explanation for the lack of between group differences in task and social cohesion stems from the nature of the league itself. Specifically, each of the 5 leagues participating in this investigation were part of a youth instructional bowling program in which the primary purpose of the program was to improve individual bowling skills. Because bowling skills were taught to many youth bowlers during the first 10 weeks of the bowling season, there may have been a carry over effect into the start of the second 10-week season, which is when this investigation took place. Participants in the study may have continued to focus on improving personal performance even though they were assigned a team goal because they had become accustomed to using their individual averages as a yardstick to demonstrate improvement throughout the first league. Thus, the focus, whether on improving skills or raising one's average was on the individual rather than the team. Support for this explanation can be found in the high number of team goal subjects who set individual performance goals.

Conclusions

In conclusion, the results of this study do not support the second hypothesis that the team goal condition would have higher

levels of task and social cohesion than either the individual goal condition or the do-your-best goal condition. Explanations for these results include the weakness of the team goal manipulation to create task and social cohesion in the team goal group, apparent difficulty in obtaining consistent feedback regarding the achievement or lack of achievement of the team performance goal, and the nature of the league focusing on the individual rather than the team.

The second purpose of this investigation was to investigate the cohesion-performance relationship in youth bowling. Although recent research had suggested a positive cohesion-performance relationship in coacting sports (see Frierman et al., 1991 or Williams et al., 1991), the subject samples were college age or older. This study was the first to focus on the cohesion-performance relationship with youth bowlers. However, based on the results of past investigations in the sport of bowling as well as other coacting sports, it was hypothesized that a positive cohesion-performance relationship would exist and that there would be a stronger relationship for task cohesion (ATG-T & GI-T) than social cohesion (ATG-S & GI-S).

The findings revealed that none of the four cohesion measures in early or mid-season significantly predicted performance outcome in mid or late season. In addition, there were no significant differences between task cohesion and performance and social cohesion and peformance. Although these findings contradict the

most recent research investigating the cohesion-performance relationship within a coacting sport environment, it should be pointed out that the subject population in this study was youth bowlers rather than college age or adult performers. There are several possible explanations for these results.

According to Tuckman (1965), there are four stages to team development: (a) forming; (b) storming; (c) norming; and (d) performing, and it is only in the final stage of team development that it would be possible to discriminate between two groups in terms of task performance. If teams have not worked together long enough to develop team cohesion, then it is unlikely that cohesion would be a factor in helping a team to accomplish its goals (Cox, 1985).

In this study, the mean number of years of bowling together for each of the 39 teams participating was only 1.33 years with 1 indicating that this was the team's first year bowling together. In addition, 69% of the league participants were bowling on the same team for the first time. Thus, in this particular situation, according to Tuckman, cohesion would not be an important factor in enhancing performance. If teammates did not know each other well, it would be difficult for cohesion to play an immediate role in influencing sport performance. Moreover, because the league lasted only 10 weeks, it would be even harder for cohesion to develop, especially if a team was to lose in the first few weeks of the season.

Interestingly, in a recent study conducted by Frierman et al., (1991) with adult league bowlers, cohesion and performance were strongly related. However, in that study, the majority of teams had bowled together for a number of years. They knew their teammates very well, were recognized by opponents by their team names rather than team numbers, and they joined the league as an entire team. Conversely, in this present study, a large portion of the youth bowlers joined the league as independent bowlers looking to be placed on a team. As a result, they did not know their teammates. They did not have an established team identity, nor were they aware of their teammates motives for participating, and thus, task and social cohesion would appear to be low.

A second explanation for the lack of findings is that there may have been a problem understanding how to answer some of the questions in the GEQ. Due to the fact that the GEQ was originally designed for adults and not children, a few questions were simplified at the start of the study to facilitate understanding. However, the format in which some of the questions were written remained the same. Thus, questions often began with the words "I do not" or "I am not" and had to be answered along a continuum ranging from strongly agree to strongly disagree. Responding to a double negative may have caused a high degree of confusion, and thus, created an inaccurate perception of team cohesion.

A third explanation may be that the GEQ does not provide an accurate assessment of cohesion in youth bowling. Questions such

as 1, 2, 6, 7, and 13 are inapplicable to the youth bowling setting. For example, question 1 is stated as: "I do not enjoy being a part of the social activities of this team." Because most teams do not have long team histories (i.e., under 2 years) and teams often do not enter a league as a whole team, there may not be any social activities, especially when teams only meet once per week.

Question 2 is stated as: "I'm not happy with the amount of playing time I get." Because every person participating in a bowling league is required to bowl each frame of each game, there is no differentiation in playing time either within teams or between teams. Consequently, question 2 might appear irrelevent when asked in a bowling setting.

Question 6 states: "This team does not give me enough opportunities to improve my personal performance." Once again, because every person bowling in a league receives an identical amount of playing time, each participant is given an equal opportunity to improve their personal performance.

Question 7 states: "I enjoy other parties more than team parties, and question 13 states "Our team members rarely party together." These questions are both similar to question 1 in that they refer to social endeavors that teams participates in. However, because most teammates do not know each other that well, team parties are a rarity and thus, social cohesion may appear low as a result of these questions.

Moreover, questions 5 and 15 are extremely difficult to answer at the early and mid stages of the season, especially if team members do not know each other well. For example question 5 states: "Some of my best friends are on this team, while question 15 is worded as, "Our team would like to spend time together in the off season." Although team members usually know who their best friends are, it is highly unlikely that teammates would go from total strangers in the first week of bowling to best friends by the end of the tenth week. In addition, knowing whether you will want to spend time together as a team seems like a complete guess for many people because of the fact that they may not have gotten to know their teammates well, or that they don't plan to see each other outside of the bowling setting.

A fourth and final reason may be that cohesion is not an important factor in positively influencing youth bowling peformance. Because the primary intent of most youth leagues is to enhance skill acquisition and development as well as improve individual performance, interteam competition is not overtly emphasized. Most teams are referred to by a number rather than a name which reflects a lack of team identity. In addition, with the exception of the first place trophy, all awards are based on individual scores such as high average, high series, high game and most improved.

In contrast, adult leagues are designed for the team more than the individual. Leagues are created based upon a variety of factors that promote more of a team identity in which task and social

cohesion can grow. For example, leagues are formed based on ability, competitiveness, meeting people, and even to learn how to bowl. This often creates an initial sense of cohesion because team members tend to join the league that most clearly fits their needs for participating. In other words, their participation motivation is the same. Thus, one can say that the decision for a team to select one league over another is in itself an act of cohesiveness. For example, teams who join highly competitive leagues, where prize money is linked to league position tend to be task cohesive at the start of the season. Alternatively, teams who are looking to "get out for the night" and have a good time with their friends usually join a socially oriented league, where weekly league fees are donated to a yearly prize fund for the purpose of having a party when the league is over.

More importantly, it should also be mentioned that adult leagues typically last 30-35 weeks, whereas youth leagues tend to be divided up into 3, 10-week segments. Consequently, bowling in the youth league is not conducive to creating and nuturing cohesion, while the adult league is. For example, if a team gets off to a poor start in the first few weeks of the youth league, it will drastically reduce any possibilities of placing in the top two positions. If a team is task-oriented, there might be a high rate of frustration knowing that the chances of winning the league are minimal even though there could be as many as 6 or 7 weeks left to bowl. However, if the league is 30-35 weeks long as is the case with adult

leagues, a few bad weeks at the onset of the season might serve to "wake up" the team and establish an immediate challenge for the team to overcome. This could create a sense of cohesiveness within the team which might help to enhance future team performances.

Support for this explanation can be found in Carron's conceptual model of cohesivenss for sport teams (Carron, 1982). In the model Carron suggests that there are environmental and situational factors that can contribute to the cohesiveness of a sport team. For example, a situational factor would be an organization's or in this case, a league's orientation. According to Carron, (1988) organizations differ in their goals, strategies for achieving goals, and the age, sex, and maturity of their members. Thus, task and social cohesion could be different depending on the orientation of the league.

Because each of the 5 bowling leagues participating in this study were all part of the Greensboro Youth Bowling Program in which the primary goal was to teach bowling and enhance individual performance, it could be expected that the focus was more on the individual rather than on team building or team performance. Thus, Carron would suggest that cohesion and performance would appear to be low or unrelated in this setting.

However, it is important to note that league orientation is only one aspect of suggesting how cohesion and performance should be related. Another factor is the personality of the team. For example, a league may focus on skill acquisition and individual improvement,

but the participation motivation of the teams involved in the league may be competitive in nature or oriented toward team performance and/or social goals (e.g., meeting people). Simply stated, participants may want to win and/or make friends more than they want to improve individual performance. Consequently, team cohesion in this setting may be high even though the organizational orientation is on the individual and would suggest otherwise.

In summary, it is important to know the organizational orientation to determine if task and social cohesion will be important factors in enhancing peformance. However, it is equally important to be aware of the participation motivation of the teams participating in the league. Although an individual orientation from both parties will almost certainly indicate that cohesion is not important to successful performance, a team orientation or a focus on winning will probably elicit higher levels of task and social cohesion.

Conclusion

The results of this investigation did not support the third and final hypotheses. Cohesion and performance were not positively related and a stronger relationship between task cohesion (ATG-T, GI-T) and team bowling performance than between social cohesion (ATG-S, GI-S) and team bowling performance did not occur.

Summary

The results of this present investigation clearly indicate that team and individual goals influence youth team bowling

performance, defined in terms of team wins, more than do-your-best goals. However, there was no team performance difference between individual and team goal conditions. Potential explanations for why no differences occurred include spontaneous goal setting, difficulty focusing on the team goal, and the question of whether league bowling falls under the rubrics of team sport or individual sport.

The second finding was that there were no between goal group differences in perceived task or social cohesion. Explanations for these findings include inability to understanding the GEQ, spontaneous goal setting, and lack of team history. An additional explanation may be that the team goal manipulation wasn't salient enough to produce changes in cohesion in the face of individual improvement and team performance outcome.

The third and final result of this investigation was that cohesion was not related to performance. Once again, problems with understanding some of the questions in the GEQ as well as a lack of team history, and too short of a time period to create and nuture cohesion may have had a role in the poor cohesion-performance relationship. Finally, it is also possible that cohesion was not viewed as an important factor in influencing youth team bowling performance as evidenced by the overwhelming focus on the individual and their performance rather than the team.

Directions for the Future

In the future, research should continue to focus on variables such as goal setting to determine its relationship to cohesion and

performance both in coacting and interacting sports, as well as with youth and adult subject populations. In addition, various goal structures such be employed, including cooperative vs competitive goals, performance vs outcome goals, and individual vs team goals to determine its effectiveness in enhancing team performance in different sport settings.

Future research should also experiment with the various styles of delivery of goals such as comparing assigned goals to self-selected goals or comparing goals selected by a team leader to goals determined by consensus. Furthermore, it might be important to revisit a coacting sport such as bowling and determine if the results of this present investigation with youth bowlers would be identical with that of adult bowlers. Along these lines, it would be important to determine what the participation motivation is of the population being investigated because it would appear to have relevance as to why a person is participating on a certain team and how that might relate to the level of task and social cohesiveness of that team. For example, would people who seek task mastery be more inclined to participate on teams with people of the same interests? And if so, would that team display a higher level of task cohesion at the beginning of a competitive season and would that level of cohesion remain throughout the season? Similarly, if an individual or a team was participating for social affiliation, would they be more inclined to have higher levels of social cohesion? If so, how would social cohesion change as the season progressed?

It would also be interesting to see future research continue to develop and compare a variety of task and social manipulations to determine their effectiveness in eliciting cohesion and enhancing the cohesion-performance relationship. For example, would a task manipulation like goal setting be more effective in creating cohesion than establishing a team identity or, identifying within team roles? Would a social manipulation such as performing with friends and providing social support in the form of encouragement increase task and social cohesion and performance more than just one of the above mentioned task manipulations.

Along these lines, future research should incorporate some of the theoretical models of cohesion and performance such as Carron's (1982) conceptual system for cohesiveness in sport teams. This could provide direction for predicting how cohesion and performance would be related in various sport settings. It could also help determine how to effectively manipulate cohesion for the purpose of seeing whether factors such as building team identity, defining team roles, highlighting areas of team success, and having team members become acquainted and familiar with each other actually work in eliciting positive changes in task and social cohesion.

In terms of the GEQ, a simplified version should be designed if future research intends to assess task and social cohesion in youth sports. Because the GEQ was originally designed for college age athletes and older, it may be necessary to design a cohesion assessment instrument for youth sports. An approach such as the

one taken by Carron et al., (1985) in developing the GEQ can be applied to youth participants in various coacting and interacting sports. In addition, alternative methods of assessing cohesion should be employed such as observation and interviewing in order to obtain a more in-depth persepective of cohesion as it pertains to a specified setting.

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Appendix A

GOAL QUESTIONNAIRE

GOAL QUESTIONNAIRE

The following questions ask your opinions about your goal. Please CIRCLE a number from 1 to 7 that best describes how you feel about your goal. If you do not understand any questions, ask Steve to help you. Once you are finished return this sheet to Steve. Thank you.

Name_____ Date_____

League Day & Time_____ Team Number_____

What is your goal?_____

1. How "HARD" do you think your goal is?

1	2	3	4	5	6	7
very easy						very hard

2. How "CONFIDENT" or "SURE" are you that you can reach this goal?

1	2	3	4	5	6	7
I can not do it						I can do it

3. How hard will you "TRY" to reach this goal?

1	2	3	4	5	6	7
not try hard at all						try very hard

4. How "REALISTIC" or "REAL" is this goal?

1	2	3	4	5	6	7
not realistic						very realistic

5. How much do you "ACCEPT" or "AGREE" with this goal?

1	2	3	4	5	6	7
I do not accept at all						I totally accept

6. Do you have any other goals? If so, write them down below.

Appendix B

WEEKLY BOWLING SHEET

Weekly Goal-Performance Update Sheet

Name_____ Date_____

Bowling League_____ Week_____

Present Bowling Average_____ Games bowled____

GOAL_____

Before getting your goal, your average was_____

Your goal for today is to average_____

Since your goal your average is _____ and you've bowled _____ games toward your goal and you have _____ games left:

You are _____ pins ahead or _____ pins behind your goal.

Do you have any other goals? If so, write them down below.

_____

_____

_____

_____

_____

_____

_____

Appendix C

COHESION GOAL QUESTIONNAIRE

COHESION-GOAL QUESTIONNAIRE

The following questions ask your opinions about goals and teamwork. Please CIRCLE a number from 1 to 7 that best describes how you feel about your goal, teamwork and how it affected your performance. Thank you.

1. Having a goal has improved our teamwork

1	2	3	4	5	6	7
not at all						very much

2. Now that we have a goal we help each other more in practice and during the game

1	2	3	4	5	6	7
not at all						very much

3. Having a goal has made me like my teammates more

1	2	3	4	5	6	7
not at all						very much

4. Bowling is more fun with a goal than without a goal

1	2	3	4	5	6	7
not at all						very much

5. Having a goal has helped me bowl better

1	2	3	4	5	6	7
not at all						very much

6. Having a goal has helped my team bowl better

1	2	3	4	5	6	7
not at all						very much

7. Having a goal has helped our team win more games

1	2	3	4	5	6	7
not at all						very much

8. During the 10 weeks in which I had a goal I concentrated _____% of the time

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

9. Having a goal has helped me concentrate on the important aspects of bowling

1	2	3	4	5	6	7
not at all						very much

10 Having a goal has immediately increased my effort while I'm bowling

1	2	3	4	5	6	7
not at all						very much

11 Having a goal has helped keep me trying hard throughout the bowling season

1	2	3	4	5	6	7
not at all						very much

12 Having a goal has helped me develop and use new bowling strategies

1	2	3	4	5	6	7
not at all						very much

13 I spoke to my teammates about my goal

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

14 I spoke to people on other teams about my goal

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

15 Goals helped me to improve my performance

10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

16 I'd rather bowl with a goal than without a goal

1	2	3	4	5	6	7
not at all						very much

17 In the future, I will continue to use goals when I bowl

1	2	3	4	5	6	7
not at all						very much

18. My goal was extremely important to me

1	2	3	4	5	6	7
not at all						very much

What are your thoughts about bowling with goals? Did they help you? your teammates? Expalin how goals helped you or did not help you and your team bowl better or worse.

Appendix D

PARENTAL CONSENT FORM

Parental Consent Form

Child's Name _____ Bowling League_____

Project Title: The effect of individual and team goals on cohesion and performance in youth bowling.

I understand that the purpose of the study is to determine how individual and team goals affect a child's bowling performance and sense of teamwork. I am aware that participation in this study is strictly voluntary and I may withdraw my child at any time, without penalty.

My child and I have been informed of the procedures that will be used in the study and I understand what will be required of my child as a subject.

All information will be held confidential and anonymous and the results of the study will be made available to me and my child upon completion of the study if I so desire.

At no time will my child be at any risk during the study.

Bowling will take place at regular league time and there will be no additional fee for participating in the study. The study will take approximately 12 weeks.

I will allow my child to participate in the study.

Parental Signature_____ Date_____

Appendix E

DESCRIPTION OF STUDY

DESCRIPTION OF STUDY

To the League Coordinators, Parents and Participants in the All Star Lanes and Buffaloe Lanes Youth Bowling Program:

Dear Coordinators, Parents, and Bowlers:

For the past 10 weeks, I have been working as an instructor to improve your child's bowling. In the next few weeks, I will be conducting a study to see how individual and team goals affect youth bowling performance and teamwork. Personally, I believe that the goals will help your child's bowling as well as their level of teamwork and concentration because each goal is designed to focus on what children can do rather than what they cannot do. The study will take approximately 10 weeks and will take place during the regularly scheduled bowling league time. At the conclusion of the twelve weeks, I will be glad to share any information that I have gathered. If you agree to allow your child to participate in the study, please sign the attached consent form and have you or your child return it to me at the next bowling session.

Sincerely,

Steven Frierman, MS
Doctoral Candidate, Department of Exercise and Sport Science
University of North Carolina at Greensboro
Telephone # (919) 854-5143

Appendix F

GROUP ENVIRONMENT QUESTIONNAIRE

GROUP ENVIRONMENT QUESTIONNAIRE

The following questions are designed to assess your feelings about your personal involvement with this team. Please circle a number from 1 to 9 to indicate your level of agreement with each of the statements.

1. I do <u>not</u> enjoy being a part of the social activities of this team.

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

2. I'm <u>not</u> happy with the amount of playing time I get.

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

7. I enjoy other parties more than team parties.

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

13. Our team members rarely party together.

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

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

1	2	3	4	5	6	7	8	9
strongly disagree							strongly agree	

18. 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
strongly disagree							strongly agree	

Appendix G

MODIFIED GROUP ENVIRONMENT QUESTIONNAIRE

MODIFIED VERSION OF THE GROUP ENVIRONMENT QUESTIONNAIRE

After circulating the GEQ to some parents and children it was felt that a few questions should be altered in order to maximize the child's understanding. Here is a list of the questions and how they will be altered.

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

   I'm <u>not</u> happy with my position in the bowling line-up.

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

   I'm unhappy with my team's desire to win.

7. I enjoy other parties more than team parties.

   I enjoy other parties with other people more than parties with my teammates.

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

   I do <u>not</u> like how my teammates bowl.

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

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

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

    Our team is together in trying to reach our performance goals.

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

    Members of our team would rather be with other people than be with our teammates.

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

    Our team members have different goals for our our team's performance.

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

    Our team would like to spend time together when the league is over.

18. Our team members do not communicate freely about each athlete's responsibilities during competition or practice.

    Our teammates do not talk to each other about bowling during the game or practice.

Appendix H

INDIVIDUAL ITEM ANALYSIS OF THE MODIFIED GROUP ENVIRONMENT QUESTIONNAIRE

INDIVIDUAL ITEM ANALYSIS OF THE MODIFIED GEQ

Scales	Mean		Corrected Item Total	Squared Multiple	Alpha if Item
	Mean	SD	Correlation	Correlation	Deleted
Early ATG-T					
Q2	7.25	2.81	.3764	.1589	.6010
Q4	8.06	1.88	.3243	.1130	.6037
Q6	7.51	2.11	.5584	.3600	.4375
Q8	7.51	2.11	.4402	.2666	.5580
Alpha =	.6221				
Early ATG-S					
Q5	6.66	2.72	.4896	.3592	.4846
Q9	6.76	2.55	.3694	.2527	.5523
Q1	7.19	2.77	.1469	.1172	.6658*
Q3	6.98	2.60	.4214	.2471	.5242
Q7	6.80	2.61	.4226	.2471	.5242
Alpha =	.6093				

Early GI-T					
Q10	7.31	2.24	.3379	.2483	.4020
Q12	6.60	2.47	.2670	.0979	.4418
Q16	6.82	2.60	.4105	.2605	.3398
Q14	6.24	2.74	.0387	.0256	.5932*
Q18	7.00	2.59	.3459	.1246	.3872
Alpha =	.4959				
Early GI-S					
Q11	7.15	2.49	.4233	.2436	.7325
Q13	5.04	3.21	.4904	.2884	.7063
Q17	6.26	2.95	.6609	.4411	.5973
Q15	5.67	2.83	.5605	.3213	.6602
Alpha = .	7374				
Mid ATG-T					
Q2	7.65	2.50	.4857	.2776	.6640
Q4	8.02	1.77	.5716	.3299	.5950
Q6	7.87	1.71	.5086	.2659	.6330
Q8	7.73	1.84	.4374	.2302	.6689
Alpha =	.7028				

Mid ATG-S					
Q5	6.70	2.55	.4037	.3365	.3566
Q9	6.66	2.49	.2110	.1339	.4832
Q1	6.90	2.98	.0458	.1082	.6075*
Q3	7.24	2.27	.4217	.2020	.3585
Q7	6.77	2.53	.3662	.2265	.3883
Alpha =	.5007				
Mid GI-T					
Q10	7.79	1.84	.2663	.0982	.4622
Q12	6.61	2.59	.2778	.1023	.4519
Q14	6.14	2.62	.2056	.0600	.5034*
Q16	6.84	2.31	.3585	.1481	.3984
Q18	7.28	2.35	.3021	.1003	.4348
Alpha =	.5065				
Mid GI-S					
Q11	7.11	2.36	.5395	.3278	.6766
Q13	4.79	2.95	.5195	.2757	.6872
Q17	6.24	2.81	.6004	.3880	.6350
Q15	5.90	2.57	.4720	.2242	.7095
Alpha =	.7376				

Late ATG-T					
Q2	7.64	2.32	.2455	.0675	.5771
Q4	8.01	1.75	.3566	.1352	.4352
Q6	8.03	1.37	.4224	.2213	.4104
Q8	8.08	1.58	.3413	.1896	.4533
Alpha =	.5360				
Late ATG-S					
Q5	6.35	2.63	.5294	.4155	.3884
Q9	6.63	2.49	.3364	.1822	.5133
Q1	7.38	2.63	.0029	.0481	.6936*
Q3	7.14	2.23	.4739	.2748	.4430
Q7	6.73	2.40	.3983	.2561	.4789
Alpha =	.5721				
Late GI-T					
Q10	7.54	2.11	.3148	.2176	.4796
Q12	6.82	2.52	.4989	.3064	.3520
Q16	6.76	2.59	.4092	.2470	.4125
Q14	6.08	2.78	.0153	.0423	.6649*
Q18	7.45	2.21	.3689	.1488	.4481
Alpha =	.5389				

Late GI-S					
Q11	7.22	2.19	.5681	.3490	.7450
Q13	4.60	3.00	.5873	.3754	.7345
Q17	6.29	2.79	.6765	.4727	.6808
Q15	6.00	2.60	.5450	.3024	.7506
Alpha =	.7824				

*denotes a higher alpha coefficient without item

Appendix I

DATA LIST

DATA LIST

```
DATA LIST FILE=GOALCOH RECORDS=3
/ 1
ID          1-2
GENDER      4
GOALGP      6
TEAMAGE     8-11
YRSPART     13
BASEAVG     15-19  (2)
WK1         21-25  (2)
WK2         27-31  (2)
WK3         33-37  (2)
WK4         39-43  (2)
WK5         45-49  (2)
WK6         51-55  (2)
WK7         57-61  (2)
WK8         63-67  (2)
WK9         69-73  (2)
WK10        75-79  (2)
/ 2
WINS1       1-2
WINS2       4-5
WINS3       7-8
WINS4       10-11
WINS5       13-14
```

WINS6	16-17
WINS7	19-20
WINS8	22-23
WINS9	25-26
WINS 10	28-29
ATGT1	31-34 (2)
ATGS1	36-39 (2)
GIT1	41-44 (2)
GIS1	46-49 (2)
ATGT2	51-54 (2)
ATGS2	56-59 (2)
GIT2	61-64 (2)
GIS2	66-69 (2)
/ 3	
ATGT3	1-4 (2)
ATGS3	6-9 (2)
GIT3	11-14 (2)
GIS3	16-19 (2)
GOALQ1	21-23 (2)
GOALQ2	25-27 (2)
GOALQ3	29-31 (2)
GOALQ4	33-35 (2)
GOALQ5	37-39 (2)
GOALQ6	41
GOALTYPE	43

GOALCONC 45-47

TALKTEAM 49-51

AVGTENV 53-57 (2)

COMPUTE WINSX = WINS10-WINS5

Appendix J

RAW DATA

RAW DATA

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03 04 07 11 15 19 20 20 22 26 3400 2900 3450 2250 3550 2650 3500 2100 3600 3750 3650 2350 400 600 700 450 700 2 010 010 10474

03 1 1 1250 2 08567 09111 09117 09274 09507 09713 09458 09540 09724 09756 09817

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05 2 1 0933 2 09267 10322 10122 10033 10194 10458 10333 10173 10107 10004 09946

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07 1 3 1000 2 08900 11033 10450 09967 10275 10307 10639 10376 10546
10489 10603

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08525 08549

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09829 09898

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11214 11106

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