COHESIVENESS AND SUCCESS: COVARIATION AND CAUSALITY AMONG INTERCOLLEGIATE FIELD HOCKEY TEAMS

by

Colleen Marie Hacker

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SIGNED: Colleen M. Hacker

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

Jean M. Williams

JEAN M. WILLIAMS
Associate Professor of
Physical Education

July 14, 1980
Date

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ABSTRACT

The purposes of this study were to: 1) examine whether or not team cohesion in women's intercollegiate field hockey teams was primarily cause-for or effect-of successful performance, 2) examine the relationship of task, self and affiliation participation motivation to performance success and, 3) examine the relationship of player satisfaction to performance success and team cohesion.

A questionnaire, specifically developed for use in a sport setting, was the device used to measure cohesion, participation motivation and satisfaction. The questionnaire was administered at early, mid and post season while performance measurements were obtained at mid and post season.

Results indicated that while members of winning teams were more cohesive than members of losing teams, a circular causal relationship existed for cohesion to performance and from performance to cohesion. The only significant correlation between participation motivation and performance was for performance success leading to self participation motivation. Correlations between participation motivation and cohesion indicated that affiliation motivation leading to subsequent cohesion was the only significant statistic. Finally, while members of winning teams were more satisfied than members of losing teams, higher levels of satisfaction did not lead to increases in performance but performance success did lead to an increase in

satisfaction. The satisfaction to cohesion and cohesion to satisfaction correlations yielded a significant positive relationship.

CHAPTER 1

NATURE AND SCOPE OF THE PROBLEM

A persistent concern for athletic coaches has been the phenomenon of group cohesion and its relationship to successful performance in competitive situations. Sociological analysis of the functioning of small groups suggests that the success of a group is often as contingent upon the group's social structure as it is upon the group's skills and strategies (Cartwright and Zander, 1968). Group structure, in this case, refers to consistent patterns in feelings, attitudes and actions that represent aspects of interactions between members of a group.

Although athletic teams are a type of small group, they possess unique features that offer additional advantages with respect to small group research. Schafer (1966) has stated four such advantages. First, the sport group functions naturally rather than in an artificial or laboratory setting. Second, research focused on a particular sport controls a number of variables by holding them constant, e.g. group size, role structure, and rules of conduct. Third, sport groups often provide an ideal context for the study of both cooperation and competition and intergroup and intragroup conflicts. Finally, the nature of sport performance usually provides objective measures for group productivity; namely, errors made, points scored or allowed, or percentage of games won.

The literature concerning sport group performance suggests that team success is due to many factors, including intrapersonal factors, interpersonal factors and social structural factors. One of the most crucial aspects of the psychological composition of sport groups concerns the ability of team members to "get along" with one another in order to achieve an optimal level of performance. The amount of "togetherness" or cohesion that the group possesses has been shown to have a distinct effect upon the final outcome of a team's performance (Peterson and Martens, 1972; Widmeyer, 1977; Carron and Ball, 1977).

Definitions of Cohesion

Group cohesion has been discussed in the literature under numerous titles, including cooperation (Deutsch, 1949), interpersonal attraction (Lott and Lott, 1965), and peer group loyalty (Likert, 1961). Shaw (1971) summarized three prominent meanings attached to the term "cohesiveness": 1) attraction to the group, including resistance to leaving it, 2) morale, or the level of motivation evidenced by group members, and 3) coordination of efforts of group members. In addition, cohesion has also been considered as a "compositional" variable (Shaw, 1971), as a "structured" variable (McGrath, 1964) and also as a "process" variable (Widmeyer, 1977). Each of these perspectives, both definitional and theoretical, have made it difficult to succinctly define the specific concept of cohesion.

Group cohesiveness is reflected through varied behaviors of group members and it is, therefore, not surprising that the operational definitions and measures of cohesiveness vary considerably from investigation to investigation. According to Festinger, Schacter and Back (1950, p. 274), cohesiveness is "the resultant of all the forces acting on the members to remain in the group." This definition has received much criticism, especially concerning the difficulty of operationalizing the concept. Gross and Martin (1952, p. 564) maintain that, "The crux of the difficulties is the 'unsuitability' of the conceptual definition of cohesiveness. The conditions of application are indefinite and the difficulties of the coordination of operational definitions to it are so great that the testing of theories in which the concept is integral is apparently precluded."

Measurement of Cohesion

Later, Cartwright (1968) discussed five major approaches to measuring group cohesiveness which included interpersonal attraction among members, group evaluation as a whole, identification with a group, expressed desire to remain in a group, and composite indexes. Eisman (1959), however, using five different measures of cohesion similar to those approaches advocated later by Cartwright (1968), found that rank correlations of the five measures yielded no significant relationship. Ramuz and Van Bergen (1960) found support for Eisman's study as their replication yielded low intercorrelations among the five measures.

A number of authors (Enoch and McLemore, 1967; Van Bergen and Koekebakker, 1959) advocated attraction-to-group as a conceptual basis of cohesiveness and use of the group aspect of that concept with operational measures. Even more recently, Bakeman and Helmreich (1975) applied the attraction-to-group concept to reflect total group involvement and bonds among members of aquanaut teams. In distinguishing among performance groups, cohesion measured by total group involvement as opposed to measurement by average individual scores, was found to be far superior.

Many contemporary investigators view cohesiveness not as an unidimensional construct, but as at least, a bidimensional construct. Although various authors refer to the two aspects using different terms, the basic premise is that cohesion can be measured by individual terms, especially interpersonal attraction, and by direct group related approaches. Enoch and McLemore (1967) refer to the two components as "intrinsic attraction" and "instrumental attraction" while Hagstrom and Selvin (1965) prefer "sociometric cohesion" and "social satisfaction".

The most recent support for the bidimensional view of cohesion has come from Widmeyer and Martens (1978). Factor analytic results indicated that two aspects of cohesion loaded heavily with win percentage. These aspects were termed "descriptive cohesion," comprised of direct measurement items accounting for 62% of the variance, and "inferential cohesion" comprised of sociometric items accounting for 38% of the variance.

Once an accurate conceptual definition of cohesion was generally accepted, the next step for sport psychologists was to develop reliable and valid operational measures. According to Gill (1978) "...The Sport Cohesiveness Questionnaire (Martens and Peterson, 1971) has been used extensively and it may be the most appropriate instrument available." In addition, Gill cites that intercorrelations among the various items in the questionnaire support the bidimensional view of cohesion as a more accurate measurement of the concept than any one single measure. She cautions, however, that the questionnaire has good face validity for sport teams but lacks scientific reliability and validity determinations.

Because cohesion has been shown to require more than one conceptual measurement, and because direct group questions load more heavily on performance than sociometric items, care must be taken in accepting some research results without further examination. If the sport cohesiveness research is reinterpreted with the distinction between sociometric and direct group items in mind, the findings become more consistent. For the most part, a positive relationship has been found between direct measures and team performance. Melnick and Chemers (1974) reported the only study using direct measures which yielded a negative relationship between cohesion and performance. In addition, nearly all reported negative relationships have included some type of interpersonal attraction measure (Landers and Luschen, 1974; McGrath, 1962).

Cohesion-Performance Research Paradigms

Merely establishing a relationship between cohesion and performance, either positive or negative, does little to aid the coach interested in creating the best possible environment for successful performance. The specification of causality, that is, does cohesiveness cause successful performance, or does successful performance lead to cohesiveness, seems to be the most critical concern. Most investigators have failed to consider the time dimension in their cohesion-performance measurement and are, therefore, unable to establish a causal direction.

Some experimental designs have secured data at pre and post season only (Arnold and Straub, 1972; Landers and Crum, 1971; Peterson and Martens, 1972). In the case of preseason responses, players were asked to assess cohesiveness prior to any significant interaction among team members. Consequently, no conclusions could be drawn concerning the possible cause-effect relationship between cohesion and performance. Other studies have secured data toward the end of the competitive season only (Landers and Luschen, 1974). Using this technique, information was gained differentiating winners from losers but little was learned about the importance of group cohesion as it related to later success. The strength of obtaining data at pre and post season only is that a relationship, either positive or negative, could be established between cohesion and performance. Obviously though, the major weaknesses are that indications for a possible circular or linear causal model for the variables could not be assessed.

Encouraging methodological advances into the causality question were introduced by Bakeman and Helmreich (1975) when they used the cross-legged panel correlation technique. To apply it, two variables (cohesion and performance) must each be measured at two points in time. The essential comparison utilized to establish causal predominance is 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. Their results, $r = .133$ and $r = .717$ respectively indicated that good performance led to cohesiveness rather than cohesion leading to good performance.

Carron and Ball (1977) have recently applied this approach to sport teams. Cohesiveness was assessed at three points in time (early, mid and post season) and performance at two points in time (mid and post season). While correlations between and among the various paired variables did not directly test a causal mechanism, a strong causal inference from performance to cohesiveness was indicated via the magnitude of the various correlations. To date, the Carron and Ball study has been the only investigation in sport groups using the cross-lagged panel correlation technique in order to establish a causal direction.

Another important aspect of the group composition of sport teams concerns the level and distribution of motivational characteristics among group members. Unfortunately, group achievement orientation has seldom been studied by social psychologists interested

in sport. A limited number of studies have addressed the relationship between motivation of team members and team effectiveness.

While some investigations have found no direct relationship between participation motivation and performance outcome (Widmeyer, 1977; Cooper and Payne, 1967; Vander Velden, 1971), others have shown that participation orientation is directly related to successful performance (Martens and Peterson, 1971; Martens, 1970; Ball and Carron, 1976; Klein and Christianson, 1976). As was the case in early cohesion-performance studies, the question of direction or causality was not under test. Thus, interesting questions remain such as whether high task motivation causes successful performance and whether performance success produces high affiliation motivation. Also, what role do individual motivations play in team cohesiveness. Again, the cross-lagged panel correlation technique could provide meaningful information which might ultimately lead to establishing a relationship and possible causal direction.

Landers and Luschen (1974) have proposed that task demands are different for various sport teams and that two distinguishable types of groups are apparent; namely, interacting teams and coacting teams. Both cohesion and participation motives may be different depending upon the nature of the team's task. They argue that cohesiveness is more likely to be related to team success within interacting sport groups (e.g. basketball, soccer, volleyball) which emphasize complimentary tasks, than within coacting sport groups (e.g. rifle teams, archery, bowling) which emphasize additive tasks and scores.

In the past, the majority of studies in the cohesion-performance spectrum have focused on only a few selected sport teams. By far, the most common sport researched has been basketball (Arnold and Straub, 1972; Klein and Christiansen, 1976; Martens and Peterson, 1971; Nixon, 1977; Widmeyer, 1977). Additional studies, although usually just a single investigation, have been reported on other sport teams such as baseball teams (Landers and Crum, 1971); bowling teams (Walters, 1955); football teams (Stogdill, 1963); rifle teams (McGrath, 1962); soccer teams (Essing, 1971; Veit, 1970); ice hockey teams (Ball and Carron, 1976; Carron and Ball, 1977); volleyball teams (Bird, 1977; Slepicka, 1975); and rowing teams (Lenk, 1976). To date, not one investigation has utilized field hockey teams in the research into the cohesion-performance dilemma.

Beside the relatively few sport groups that have been investigated, with very few exceptions (Bird, 1977; Widmeyer and Martens, 1978) the research cited has been limited to only male subjects. Researchers in related areas (Zander, Fuller and Armstrong, 1972) have shown that females do not necessarily react identically to men in all achievement situations. Therefore, the use of female subjects is critical in understanding the cohesion question as it relates to female performance.

Questions still remain regarding direction of causality for performance success, cohesiveness and participation motivation in a sport setting. The methodological procedures employed by Carron and Ball (1977) provide a realistic model for investigating

these issues. Considering the scarcity of cohesion studies on the female athlete and the complete lack of research on field hockey teams, there particularly appears to be merit in investigating these questions within the framework of female field hockey teams.

Statement of the Problem

The primary purpose of this study was to examine whether team cohesion in women's intercollegiate field hockey teams was specifically cause-for or effect-of successful performance. Auxillary purposes were to: 1) examine the relationship of task, self, and affiliation participation motivation to performance success and team cohesiveness, and 2) examine the relationship of player satisfaction to performance success and team cohesiveness.

Hypotheses

The hypotheses for this study were:

1. Cohesiveness of successful teams will be greater than the cohesiveness of unsuccessful teams.

2. Performance success will cause an increase in team cohesion.

3. Team cohesion will not cause an increase in performance success.

4. No correlation will be found between participation motivation and performance.

5. No correlation will be found between participation motivation and cohesiveness.

6. Successful teams will be more satisfied than unsuccessful teams.

7. Satisfaction will not increase performance success.

8. Performance success will increase satisfaction.

9. Satisfaction will increase subsequent cohesion.

10. Cohesion will increase subsequent satisfaction.

Definition of Terms

For the purpose of this study, the following terms were defined:

Cohesiveness -- the attraction of a group for its members as measured by the 7 questions on the Martens, Landers and Loy (1972) Sport Cohesiveness Questionnaire, plus a composite cohesion score.

Interpersonal Attraction -- feeling of friendship as measured by teammate ratings on a 9-choice alternative scale between two extremes.

Power/Influence -- the amount of influence a team member had with the coach and other team members as measured by a 9-choice alternative scale between two extremes.

Enjoyment -- how much each individual liked playing field hockey with the particular group as measured by a 9-choice alternative scale between two extremes.

Sense of Belonging -- the degree to which an individual felt a sense of belonging to the team as measured by a 9-choice alternative scale between two extremes.

Teamwork -- the ability of individual members to coordinate efforts to reach team established goals as measured by a 9-choice alternative scale between two extremes.

Closeness -- the degree to which the team was closely knit as measured by a 9-choice alternative between two extremes.

Value of Membership -- the degree to which team members valued membership on this particular team compared to other groups to which they belonged as measured by a 9-choice alternative between two extremes.

Composite Cohesion -- summation of the responses on the seven questions contained in the Sport Cohesiveness Questionnaire.

Performance -- a form of behavior directly measured and restricted to the team's season win-loss record or performance outcome.

Successful -- a team's performance outcome in which 60-100% of the regular season games were won.

Unsuccessful -- a team's performance outcome in which 0-50% of the regular season games were won.

Early Season -- the time at which no more than two regular season games had been completed.

Midseason -- the time at which approximately one half of the total regular season games had been played.

Postseason -- the time at which all regular season games had been completed.

Participation Motivation -- the individual's reasons or motivations for participating in a given group activity as characterized by Bass's three categories (Bass, 1962) and as measured by the Martens, Landers, and Loy (1972) Sport Cohesiveness Questionnaire.

Self Motivation -- participation with the expectance of personal rewards or personal satisfaction as measured by a semantic differential and forced choice tool.

Task Motivation -- participation with the expectance of achieving the group's criterion task as measured by a semantic differential and forced choice tool.

Affiliation Motivation -- participation with the expectance of maintaining happy, harmonious relationships among group members, as measured by a semantic differential and forced choice tool.

Satisfaction -- the degree to which an individual was satisfied with one's own performance and with being on the team as measured by a 9-choice alternative between two extremes.

Scope of the Study

Data for this research involved the top 15 players on the 1978-79 field hockey teams of nine colleges and universities from Pennsylvania, New York, Delaware, and Maryland. Therefore, generalizations regarding the results of the present study must be limited to a similar population.

Several basic assumptions must also be accepted before conclusions could be drawn from this investigation. First, the assumption of stationarity existed. This is, the causes of the team and individual variables were not different at the various measurement times. Second, good performance usually resulted in good performance outcome reflected through a team's win-loss record and level of success. Third, all subjects responded to the cohesion questionnaire with true feelings about teammates, uninfluenced by transient personality variations, popular opinions, Hawthorne effect or deliberate alterations. Finally, that the problem of synchronicity (measuring cohesion and performance at the same time) and retrospection (recall of behaviors, attitudes or experiences of the past) would not invalidate results obtained from a cross-lagged panel correlation analysis.

In addition to those basic assumptions, many of the limitations which are characteristic of field experiments were included in this study; namely, sampling and human behavioral changes over time. Also, interpersonal attraction, participation, motivation and satisfaction were initiated and further developed in situations away from the hockey field. The influence from these informal encounters were not controlled. Although the Sport Cohesiveness Questionnaire (Martens, Landers, and Loy, 1972) is believed to be the best tool in a sport setting for the measurement of the bidimensional construct of cohesion, its reliability and concurrent validity have yet to be determined.

CHAPTER 2

REVIEW OF THE LITERATURE

The review of the literature is divided into the following topical areas: 1) group structure and measurement, 2) support for high cohesion-high performance relationship, 3) non-support for a high cohesion-high performance relationship, 4) participation motivation and member satisfaction and, 5) problems of past research.

Group Structure and Measurement

Throughout history, man has been concerned with the issues of social conformity, affiliation, and the ever-present problems of intragroup relations. It has been only during recent years, however, that researchers have had the methodological tools and theoretical foundations to translate these issues into productive research activity. According to McGrath (1964, p. 67) group structure, "refers to the set of related positions in a group and the total patterns of role relationships among the occupants of those positions." Cartwright and Zander (1953) found that the factors that determine group structure can be classified into three major categories: 1) the requirements for efficient group performance, 2) the abilities and motivations of group members, and 3) the physical and social environment of the group.

If a member is to be concerned with achieving the group task, the following conditions must be perceived: that a social unit exists, that the person is within that unit rather than outside it, and that events in the group are likely to be relevant to satisfaction with that group (Zander, 1971). When a group has completed the task, participants are interested in how well the group has performed. In other words, a comparison is made between performance outcome and aspiration.

Research shows that subjects made significantly more favorable ratings of group members if their group performed above its aspirations and less favorable ratings if it has performed below those aspirations (Zander and Ulberg, 1971). Members of high cohesive groups were generally better satisfied with the group and with its products than members of low cohesive groups (Gross, 1954; Van Zelst, 1952). In that sense, members of high cohesive groups interacted more with other members which further increased group functioning and member satisfaction.

A number of studies have addressed the effects of interaction and competition between individuals and groups. Interaction between persons tends to increase their liking for one another (Festinger, 1951; Hommans, 1950; Sherif and Sherif, 1956); the tendency for interaction to result in greater liking tends to be nullified, or reversed, if the interaction is accompanied by intragroup competition (Deutsch, 1953; Grossacker, 1954); and, intergroup competition leads to increased intragroup cohesion (Sherif and Sherif, 1956).

For the most part, the motivations of individual group members depend upon the nature of the rewards members hope to obtain through group activity, the relationship of these rewards to task performance, and the distribution of rewards among group members. A highly motivated group may or may not be successful depending upon the level and distribution of member abilities. The group's task, power, communication and friendship structures may aid or hinder task performance (McGrath, 1964).

Several individual to group reward patterns are able to be identified. First, group members can receive rewards on the basis of individual performance, without regard to task performance of other group members. Second, group members could be rewarded under a system whereby performances are interdependent but individuals are in competition for rewards. Third, group members are striving for rewards in which performances are, again, interdependent, but individuals can gain rewards best if they cooperate with one another (Thomas, 1957).

Researchers have shown that group task performance as well as interpersonal group relations are enhanced under the latter condition (Thomas, 1957; Landers and Luschen, 1974).

To simplify this distinction, some social psychologists have classified groups as coacting, i.e. individuals working relatively independently toward a group goal, or interacting, i.e. individuals working interdependently toward a group goal (Landers and Luschen, 1974). Interacting teams are composed of individuals whose roles

may be similar or specialized. Regardless of role specialization, one individual's ability to perform specific task is affected by the performance of other group members. Conversely, members of coacting teams do not deal directly with each other but in an additive capacity which eventually contributes to a total group outcome. In a sport setting, basketball, hockey, and soccer would be examples of interacting groups whereas golf, bowling, and fencing would be examples of coacting groups. Coacting groups may be further divided into two groups: those in which coaction occurs discreetly and independently throughout competition, (e.g. archery, golf, rowing, bowling) and, those in which coaction occurs in a serial manner (e.g. relay teams in swimming and track). One might logically assume that the ability for members to "get along" and "stick together" would be more valuable to interacting rather than coacting groups. Although greatly limited in number, results from research investigations are not quite so definite and unequivocal.

One measure of interpersonal relationships is the degree to which the members of the group are attracted to each other, or, the degree to which the group coheres. This aspect of the group is usually referred to as group cohesion. Though not a simple concept, at least three different meanings have been attached to the term: 1) attraction to the group and desire not to leave the pack, 2) morale or level of group members' motivation and, 3) coordination of efforts of group members (Shaw, 1971). The major difference between interpersonal attraction and group cohesiveness is that the former

emphasizes individual attractions, whereas the latter emphasizes the number, strength, relationship, and pattern of attractions within the group. Since group cohesiveness is evidenced through a variety of behaviors by group members, it is not surprising that the operational measures of cohesiveness vary from investigation to investigation. Care must be taken in overgeneralizing research findings in light of the vast spectrum of theoretical applications of cohesion.

Studies indicate that there is little agreement on any one measure which seems to be a completely adequate indicator of this phenomenon. A comprehensive study by Eisman (1959) was conducted involving fourteen natural student groups to determine their level of group cohesiveness. Five different measures of cohesiveness were utilized: a) sociometric index based on friendship, b) direct rating of group attractiveness, c) average number of reasons given by group members for belonging to the group, d) number of same reasons for group membership given by a majority of the members and, e) degree of similarity existing among group members with respect to their values. Rank correlation coefficients revealed no significant relationship between the five measures indicating that a unidimensional theory of cohesion should be re-examined. A replication by Ramuz and Van Bergen (1960) supported Eisman's original findings.

Although all cohesive groups are attractive to their members to some degree, the attraction may be toward some goal of the group; hence, the other members of the group may be important principally because they represent the means by which an individual might achieve

that goal. Attraction, therefore, may consist of two components: intrinsic attraction and instrumental attraction (Enoch and McLemore, 1967). This bidimensional view of group cohesion could explain the paradox of equally valid measures of cohesion being poorly correlated under some conditions. Hagstrom and Selvin (1965) have found empirical support for the bidimensional view when they discovered two independent dimensions of cohesion which they termed "sociometric cohesion" and "social satisfaction" respectively.

Additional support for the bidimensional view of cohesion has come from a measurement device developed by Martens and Peterson (1971) called the Sport Cohesiveness Questionnaire. Intercorrelations among the individual items of the questionnaire (Peterson and Martens, 1972) support the classification of items into two basic categories: a) direct items requiring the respondent to rate the group as a whole, and b) sociometric items. All intercorrelations among the sociometric items (.62 to .78, $p < .01$) were statistically significant; while all direct items correlated significantly with each other (.44 to .75, $p < .01$). In addition, not one of the sociometric items correlated significantly with any of the direct items.

On the Sport Cohesiveness Questionnaire, each subject responded to questions designed to obtain, 1) the degree of interpersonal attraction among members; 2) the personal influence within the team of each member; 3) the value of membership on the team; 4) the degree to which the individual possesses a sense of belonging

in the team; 5) the degree to which the individual obtained enjoyment playing the given sport with the team; 6) the level of teamwork; 7) the degree to which the team was closely knit. All ratings were made using a nine-point semantic differential scale between two extremes. A lower score reflected greater cohesion.

Satisfaction of team members was also measured from three different questions. Two questions examined the respondent's satisfaction with one's personal performance while the third question dealt with the player's satisfaction playing on that particular sport team.

In Gill's (1978, p. 143) review of the cohesion-performance research in sport groups, she concludes that the "Sport Cohesiveness Questionnaire (Martens and Peterson, 1971) has been used extensively and it may be the most appropriate instrument available." She further states that, "In using the Martens and Peterson questionnaire, researchers are advised to analyze the results multivariately because interrelationships among items have not been established and because no standard procedure for deriving a single overall score exists."

Thus far, the use of a questionnaire device for cohesiveness measurement has been discussed. Gill (1978) suggests that cohesion could be assessed in a variety of ways. One other method would be a behavioral measure. Both Libo (1953) and Vander Velden (1971) used a locomotion criterion. This measure was obtained by counting the team members who left the group during the season. Vander Velden indicated, however, that the mean cohesiveness score was 1.8 showing that relatively few members actually left the team.

Besides questionnaire and locomotion devices, Bakeman and Helmreich (1975) measured cohesiveness by direct observation of more specific behaviors. In this case, leisure time conversations were the measure of cohesion. Unfortunately, communication patterns are not necessarily valid for sport teams. Obviously, further research should indicate which measurement devices provide the most reliable and valid assessment of cohesion in operational terms.

Past research into the cohesion dilemma can generally be divided into two topical concerns: 1) What is the relationship between cohesiveness and productivity?; and, 2) Does causality flow primarily from cohesiveness to performance or from performance to cohesiveness? Very few studies have addressed themselves to the latter question and despite methodological conformity of research paradigms, the findings are far from consistent concerning the first question of the relationship between the two variables. For every study finding that cohesiveness is positively related to performance or productivity, another reports no relationship or even a negative relationship between cohesiveness and performance.

Support for High Cohesion-High Performance Relationship

Even though the relationship between the level of group productivity and the degree of cohesion in a group is a contentious one, relatively few laboratory and field studies have been designed primarily to examine that relationship.

Studies on clerical office workers (Katz, MacCoby and Morse, 1950), aircraft workers (Mayo and Lombard, 1944), and industrial work groups (Marrow, 1957) reported significant positive relationships between cohesion and productivity levels. In addition, other investigators have found support for a positive cohesion-performance relationship (Cohen, 1955; Deutsch, 1953; Jones and Vroom, 1964).

An investigation into the studies on group cohesion and level of group productivity show the presence of two attributes (task orientation and control through individual duties or rights) in all studies noting a positive relationship. All of these studies addressed themselves to determining whether a relationship existed between cohesion and productivity but made no effort to determine direction of influence or causality flow.

In a study of bomber crew effectiveness and the relationship of perceived to actual crew attitudes, Berkowitz (1956) found that when crew cohesiveness was high, there tended to be fewer failed missions. In addition, higher ratings of crew effectiveness were obtained for crews perceived to be high in motivation versus crews perceived to be low in motivation.

In an attempt to determine ways in which performance affects leader behavior, Farris and Lim (1969) found that high past performance was found to increase a number of measures, two of which were group cohesiveness and satisfaction. This effect of performance on cohesion and member satisfaction was explained by increases in leader supportiveness and interaction facilitation.

One of the earliest and often cited studies in support of a positive cohesion-performance relationship in sport was conducted by Myers (1962). Sixty three-man teams were divided into competitive and noncompetitive groups for a recreational rifle tournament. Findings indicated that better team adjustment was evidenced by members in the competitive group and subjects who were successful in the task. It was also concluded that regardless of the competition condition, high success teams increased esteem for teammates while low-success teams decreased esteem.

Klein and Christiansen (1976) found a positive cohesion-performance relationship in their study of men's basketball teams. Members of two eight-member teams were observed during game play in the first stages of the experiment and then seven members of one team participated in a series of "three-on-three" games for the second stage. Players rated team attractiveness prior to each game. High and low categories were used to categorize both cohesiveness and performance, revealing a positive relationship between the two. In this case, teams of varying cohesiveness were formed by using scores on sociometric ratings.

In 1963, Stogdill investigated the relationship between cohesion and performance under varying degrees of motivation and drive. High school football coaches were used to observe six Ohio State football games to obtain cohesion and drive measures. Two nine-point rating scales were the tools employed. Stogdill found that both cohesiveness and drive ratings were highly intercorrelated

in addition to yards gained. Factor analyses showed drive, cohesion and production as independent measures. It was concluded that under conditions of high drive, cohesion and productivity are highly correlated.

Vander Velden (1971) applied several social psychological variables to the study of 25 high school boys basketball teams. He used a behavioral operational definition of cohesion, i.e., number of team members who left during the season. Performance was defined as the difference between points scores and allowed as well as winning game percentage. A positive relationship was found between cohesion and both measures of performance.

Two of the most notable early contributions to the research on sport team cohesion were conducted by Martens and Peterson (1971) and Peterson and Martens (1972) as they studied 144 intramural basketball teams. The use of a relatively large number of subjects, 1200 college males, gives these studies added reliability as compared to many others, often involving 20 or fewer teams. In the first study cohesiveness was assessed at both preseason and postseason, utilizing the Sport Cohesiveness Questionnaire (Martens and Peterson, 1971).

On the basis of preseason scores, each team was divided into high, medium or low cohesiveness categories with success and satisfaction the dependent variables. In all cases, the teams in the high cohesion category won more games than teams in the medium or low category. Those teams whose individual members attributed greater value of membership to the group won significantly more games. In

addition, they found that the teams rating themselves high on ability were significantly more satisfied than either moderately or low rated teams. Also, in the power, sense of belonging, closeness and value of membership questions, teams high on those measures were significantly more satisfied. It was interesting to note that even though sense-of-belonging and value-of-membership were designed to measure the same concept, i.e. individual's relationship to the team, the sense-of-belonging question did not differentiate between successful and unsuccessful teams whereas the value-of-membership question did.

Peterson and Martens (1972) second study attacked the problem in the opposite direction; the influence of success on postseason cohesion. The use of a multivariate analysis of covariance (covarying out preseason cohesion) and subsequent univariate analyses indicated that performance success significantly affected postseason cohesiveness. In both cases, successful teams were more cohesive than less successful teams.

Peterson and Martens (1972) also studied the influence of success and residential affiliation on the postseason cohesiveness of college intramural basketball teams. Three types of residential organizations and three levels of success were independent variables. Results showed that success, as compared with moderate success or lack of success, positively related to cohesion.

No significant interaction was found between residential affiliation and success.

Another study, using the Sport Cohesiveness Questionnaire and high school male basketball players, was conducted by Arnold and Straub (1972). The questionnaire was administered at the beginning and end of the season. Ten teams were classified into two groups: successful (top five teams) and unsuccessful (bottom five teams). Preseason differences between successful and unsuccessful teams were examined by a multivariate discriminant function comparison. No significant differences were found considering all cohesiveness measures simultaneously. Results on the postseason cohesion-performance relationship indicated that successful team players were significantly more cohesive than players from less successful teams.

Landers and Crum (1971) used the Sport Cohesiveness Questionnaire to study the effect of team position and success on postseason measures of cohesiveness. Preseason scores were covaried out. Twenty-six high school baseball teams were divided by win-percentage into successful and unsuccessful groups. Results indicated that the team success factor was not significant for sociometric ratings on team member's ratings of their relationship to the group. Members of successful teams, however, were found to indicate more cohesiveness than members of unsuccessful teams on questions directly assessing total group cohesiveness.

Nixon (1977) wrote a rather comprehensive review of the cohesion literature in an attempt to clarify past research findings. He also presented previously unreported results from a research project testing some theoretical hypothesis. Although small sample

size was a limiting factor (20 subjects), results indicated that both cohesiveness and interpersonal attraction were found to be positively related to team success. One unique aspect of this study was the classification of data into individual responses, in contrast to the customary categorization of scores into team values. He failed however, to provide statistical tests of significance.

The only study using female subjects exclusively was conducted by Bird (1977) to examine the relationship of cohesiveness and leader orientation to intercollegiate volleyball performance. From the Southern California Conference, the two most successful and the two least successful teams from each of the two divisions were analyzed at the end of the season using both a group atmosphere scale and the Sport Cohesiveness Questionnaire. Results indicated that the four successful teams were more cohesive than the four unsuccessful teams.

Using 117 male and 81 female university volunteers, Widmeyer and Martens (1978) conducted a study to determine whether cohesion, ability level, participation motivation and sex of three-player basketball team members mediated the cohesion-performance outcome relationship. An orthogonally rotated factor matrix yielded two types of cohesion from the eight separate measures on the Sport Cohesiveness Questionnaire: "Descriptive Cohesion" and "Inferential Cohesion". Multiple regression analyses revealed that direct cohesion measures (team closeness, team attraction) accounted for 18% of the variance in performance outcome. Measuring cohesion by summing

individual's evaluation of teammates contribution to the task and group enjoyment accounted for 7% of a team's performance outcome. Taking into account task motivation, affiliation motivation, ability level and sex of players did not improve the ability cohesion scores to predict performance outcome. The self motivation, however, improved cohesions' prediction of performance outcome by 7%.

Ball and Carron (1976) expanded upon the research paradigm by Martens and Peterson (1971) when they studied the influence of team cohesion and participation motivation upon performance success in intercollegiate ice hockey teams. Once again, the Sport Cohesiveness Questionnaire was the tool used to operationally measure cohesion. In this paradigm, however, cohesiveness and participation motivation were assessed at three points in time: early season, midseason, and postseason. By using a stepwise multiple regression analysis, it was noted that 95% of the variability in postseason success could be accounted for by midseason teamwork, closeness and enjoyment measures of cohesion and early season self motivation. The variables which best discriminated among successful, moderately successful and unsuccessful teams (in decreasing order of importance) were: midseason value of membership, years of experience, midseason influence, midseason enjoyment, early season self-motivation, early season interpersonal attraction, midseason teamwork, midseason closeness and early season value of membership.

Other studies conducted on various sport teams also have yielded a positive relationship between the two variables of team cohesion and team performance. These studies include basketball teams (Chapman and Campbell, 1957; Nixon, 1977; Smith, 1968), bowling teams (Walters, 1955), football teams (McIntyre, 1970), rifle teams (Chapman and Campbell, 1957), soccer teams (Essing, 1971; Veit, 1970), and volleyball teams (Slepicka, 1975; Vos and Brinkman, 1967).

As previously mentioned, the second, and perhaps most important, question currently being considered involves the direction and causality flow from either cohesion to performance or performance to cohesion. Bakeman and Helmreich (1975) examined the causality question in a nonlaboratory setting. Ten teams of aquanauts were observed 24 hours per day for 182 consecutive days while functioning in an underwater habitat. Cohesion was defined as the time team members engaged in conversation during their leisure periods. Performance, on the other hand, was defined as the percentage of time engaged in work relative to the total time under observation. For analysis of the data, Bakeman and Helmreich employed the cross-lagged panel correlation described in detail by Kenny (1975) and Calsyn (1976). Simplifying data to workable form, cohesiveness and performance scores were computed into the first and second segment of the mission. The significant correlation between first-segment performance and second-segment cohesiveness ($r = .72$, $p < .02$) and the non-significant correlation between first-segment cohesion and second

segment performance ($r = .13$) suggested an apparent causal flow from performance to cohesiveness. Thus, cohesion accounted for 42% of the performance variance. They concluded that cohesion was not an important determinant of performance, but that good performance may well have been a cause for cohesiveness.

Later, Carron and Ball (1977) applied the cross-lagged panel correlation design to sport teams. Cohesiveness was assessed at three points in time, early, and mid and post season; and performance at two points in time, mid and post season. Participation motivation was also analyzed for its relationship to the cohesion-performance question. Carron and Ball reported support for a causal flow from performance to cohesiveness as indicated by the correlation between midseason performance and postseason cohesiveness ($r = -.77$, $p < .05$), but no support for the view that initial cohesiveness resulted in later performance success, as indicated by the correlation between midseason cohesion and postseason performance ($r = -.39$, $p < .05$). (Negative correlations indicated a positive relationship between cohesiveness and performance success because lower cohesion scores reflected greater cohesiveness.) There was no indication that high self, task or affiliation motivation led to more successful performance or that successful performance increased the level of any of the three participation motivations.

The positive support for a high cohesion-high performance relationship was substantiated primarily for only selected measures of the overall experimental design. Both the Martens and Peterson

(1971) and Widmeyer (1977) studies found that only direct measures of cohesion, rather than sociometric measures, accounted for the major differences between successful and unsuccessful groups. Results from the Arnold and Straub (1972) and Landers and Crum (1971) investigations indicated even more restricted conclusions concerning a significant relationship between cohesion measures and performance success. Ball and Carron (1976) also found a positive cohesion-performance relationship, but only for selected measures of more than 20 being investigated. Cohesiveness did not cause performance success in the second study by Carron and Ball (1977) but they did find strong support for a performance to subsequent cohesion relationship.

Non-Support for High Cohesion-High Performance Relationship

Findings on the relationship between group cohesion and productivity cited above generally support the contention that a positive relationship existd between the two variables. Other conclusions reached in small group literature are contradictory. Some researchers report no significant relationship while others have found a negative relationship. Katz, MacCoby and Gurin (1951), studying groups of railroad maintenance workers, and Seashore (1954), investigating industrial work groups, reported no significant relationship between group cohesion and level of productivity.

Deep, Bass and Vaughn (1967), in a well designed study, assigned students to homogeneous or heterogeneous groups. Homogeneous

groups (those trained in the same groups) performed significantly more poorly than heterogeneous groups (those not trained in the same group) in a business game.

Several studies in sport settings have found a negative or no cohesion-performance relationships. Fiedler (1954) tested the hypothesis that group effectiveness is related to the interpersonal perceptions which members of the group have toward one another in boys' high school basketball teams. The first part of the study yielded a negative relationship between assumed similarity measures and games won. A second sample of seven "good" and five "poor" teams was used in a validation study. Again, a negative relationship was found between assumed similarity scores and team performance.

In a more recent study, Melnick and Chemers (1974) used four of Martens and Peterson's cohesiveness items (ratings of sense of belonging, value of membership, teamwork and closeness) in their assessment of cohesion. The investigators failed to find statistically significant correlations between any of the cohesiveness measures and college intramural basketball team success. With correlations ranging from -.10 to .22, Melnick and Chemers failed to find even a trend toward a positive cohesion-performance relationship.

Using previously gathered data from Fiedler's (1954) basketball teams, Grace (1954) reported that team cooperation was negatively related to performance. Grace also suggested that good performance was a function of the conformance of group members to

each other and to the group as a whole but that a wide range of cooperativeness was detrimental to good performance.

In 1962, McGrath took advantage of an ongoing experiment with rifle teams (Myers, 1962) to study the relationship of prior interpersonal perceptions, adjustment, and effectiveness to subsequent marksmanship scores. Two types of teams were formed, those with positive interpersonal relations (PR) and those with nonpositive interpersonal relations (NR). The NR group had significantly better marksmanship scores and showed significant improvements while the PR group did not improve. Like Fiedler (1954), McGrath suggested that members on high cohesive teams may be more concerned about maintaining good interpersonal relations than with effectively performing the criterion task.

Additional support for a negative cohesion-performance relationship came from Hans Lenk (1969, 1976) in his case study of championship rowing teams (eight members) in Germany from 1962 to 1964. He objected to the usual assumption that only when intragroup relations are close may good performance be elicited from team members. Observations and sociometric data revealed so much intragroup conflict, it was predicted that the team would split into two opposing groups. Despite the interpersonal conflicts, these teams increased the quality of their performance and went on to become world champions.

Landers and Luschen (1974) indicated further support for a negative cohesion-performance relationship when they found that

unsuccessful teams had higher interpersonal attraction ratings than successful teams. Near the end of the season, mens' bowling team members rated each teammate on interpersonal attraction, task contribution, two communication items and two power or influence items. A multivariate analysis of the six ratings indicated that of the 52 teams, successful (the top 15) and unsuccessful teams (the bottom 15) were significantly different, with successful teams having less interpersonal attraction. In their opinion, intrateam rivalry and competition may not only improve individual performance, but may also improve the overall team performance.

The amount of interpersonal attraction among team members may not be the only variable that affects team performance. As was pointed out in a study by Ball and Carron (1976) another factor which may interact with cohesion and ultimately influence the cohesion-performance relationship was participation motivation.

Participation Motivation and Member Satisfaction

In his theory, presented as categorizing interpersonal behavior, Bass (1962) postulated that an individual's orientation toward participation in group activity is characterized by three dimensions: self, i.e. direct rewards or personal satisfaction expected from the group and its activities; task, i.e. concern directed toward carrying out the group's task; and affiliation, i.e. concern directed toward maintaining happy, harmonious relationships within the group. Later, elaborating on this concept, Dunteman and

Bass (1963) suggested that interpersonal behavior is a reflection of inherent personal needs and type of satisfaction desired.

Other researchers (Bales, 1950; Hommans, 1950; Hollander, 1967) suggest that there are two major purposes for member participation. Basically, these two clusters of motives are task motivation and affiliation motivation. The distinction between group motivations is critical to understanding group cohesiveness. Groups who are primarily task oriented will place more weight on factors contributing to successful task completion while placing less emphasis on factors facilitating interpersonal attraction. Conversely, groups who are primarily affiliative in nature will place greater emphasis on those factors contributing to interpersonal attraction and less importance to factors expediting task completion.

Typically, participation motivation has been assessed using the Orientation Inventory developed by Bass (1962). This inventory provides scores on the three general types of participation motivations (self orientation, affiliation orientation and task orientation) discussed earlier.

Participation motivations were later incorporated into the Sport Cohesiveness Questionnaire (Martens and Peterson, 1971) on the basis of Bass' more general tool. Martens, Landers and Loy (1972) added another participation motivation section to the questionnaire requiring respondents to reflect their individual participation orientation. The first scale consisted of three questions designed to assess the degree to which the individual's motives for

participation reflected self, task or affiliation motivation. These three motives were measured on a nine-choice scale with lower scores reflecting greater motivation toward the orientation being examined.

The second participation motivation scale consisted of ten questions each of which required a forced choice response (most true versus least true) to three statements. Each of the statements reflected one of the three motives for sport participation, self, task and affiliation orientation. Most studies in sport settings have utilized the Sport Cohesiveness Questionnaire in their study of participation motivations (Ball and Carron, 1976; Carron and Ball, 1977; Martens, 1970; Widmeyer and Martens, 1978).

Fiedler (1954) however, indicated that affiliative needs and success orientation were not always mutually helpful. Fourteen basketball teams were examined. In general, members of the more successful teams showed slight to moderate tendencies to exhibit critical evaluations of least-preferred co-workers. That is, the teams with scores indicative of low needs for acceptance and affiliation tended to be more successful than teams in which individuals wanted to maintain positive interpersonal relations.

Carron, Ball and Chelladurai (1977) were concerned with the interactive effects of preseason individual participation orientation and season win/loss performance success upon personal satisfaction expressed at the end of the season. Their study examined ice hockey teams and used the Sport Cohesiveness Questionnaire. Results indicated

that success, motivations, and the various interactions had no effect upon satisfaction with individual performance. Both success and high task motivation resulted in heightened levels of satisfaction in relation to team performance.

Earlier, Ball and Carron (1976) studied the three participation motives in combination with a series of cohesion measures. Again, they used the Sport Cohesiveness Questionnaire (Martens, Landers and Loy, 1972). They noted that the self motive was the only one of these three participation motivations which significantly discriminated among successful, moderately successful and unsuccessful intercollegiate ice hockey teams. It was noted that 95% of the variability in postseason success was accounted for by the cohesion variables of midseason teamwork, closeness and enjoyment and early season self motivation. Using a similar research paradigm with respect to participation motivation, Carron and Ball (1977) found that there was no indication that high self, task and/or affiliation motivation led to more successful performance or that successful performance increased the level of any of those motives.

Using the two participation motivations of affiliation and task orientation, Martens (1970) studied consequent member satisfaction of college intramural basketball teams. He used two questions contained in the Sport Cohesiveness Questionnaire (Martens and Peterson, 1971) to measure the respondent's participation orientation. A multivariate Analysis of Variance indicated that high affiliation motivated teams in contrast to moderate or low affiliation-motivated

teams were less successful but more satisfied. High task motivated teams, however, were more successful and more satisfied than moderate or low task motivated teams. No significant interaction was noted between task and affiliation motivations.

Cooper and Payne (1967) reported a study concerned with the relationship between task motivation and success. They found that among English football teams, a significant correlation of .72 existed between high task motivated coaches and trainers and team success. No significant relationship was found between success and players with high task motivations, however.

Vander Velden (1971), in his study of boys' high school basketball teams, found no significant relationship between task relevant attitudes of team members and team success. Similarly, Widmeyer (1977) in a study of experimentally contrived intramural basketball teams found no significant, direct relationship between performance outcome and task, self, and affiliation participation motivations. The Widmeyer investigation utilized the Sport Cohesiveness Questionnaire to measure participation motivation.

As previously cited, both Lenk (1969) and McGrath (1962) reported that a high degree of cohesiveness interfered with effective performance in rowing teams and rifle teams, respectively. Since members on high cohesive teams may be more concerned with maintaining good interpersonal relations than with effective performance, it seemed logical to these investigators that teams high in affiliation motivation may be expected to perform less effectively than teams low in affiliation motivation.

In concluding this discussion of the relationship among some key factors in the cohesion-performance relationship, it must be kept in mind that a wide range of methodological and theoretical paradigms have been used throughout the various investigations. The sport cohesiveness research is marked with equivocality. While some studies provided evidence for a positive relationship between cohesiveness and performance (Arnold and Straub, 1972; Nixon, 1977) others suggested a negative relationship (Fiedler, 1954; Landers and Luschen, 1974; McGrath, 1962; Lenk, 1969) or no relationship at all (Melnick and Chemers, 1974).

Many ex post facto explanations have been offered to account for these apparent discrepancies in the findings regarding group cohesion and group performance. In the following section, the most often cited reasons for the equivocal results will be discussed along with suggestions for future research needs.

Problems of Past Research in Cohesion

While the cohesion-performance data presents an ambiguous picture at first glance, a great deal of clarity can be restored by taking into account the various conceptual and operational definitions of cohesion, along with the diversity in groups considered and measurement tools utilized. In some cases, only one aspect of the multidimensional concept of cohesion was used as an operational device, while in others two or more devices were used.

is probably the most flagrant violation of the scientific method in cohesiveness research." As was cited earlier, previous research designs have included data gathered at pre and post season only; namely, either preseason cohesion compared to later performance success (Martens and Peterson, 1971; Widmeyer, 1977; Ball and Carron, 1976; Arnold and Straub, 1972) or team performance compared to post-season cohesiveness (Landers and Crum, 1971; Peterson and Martens, 1972; Nixon, 1977). Establishing a relationship between the variables is part of the problem, but the specification of causality seems to be a critical question to which few studies have responded.

The cross-lagged panel correlation shows considerable promise for shedding light on causal directions between the cohesion-performance relationship. To apply it, two variables (in this case, cohesion and performance), must be measured at two points in time. The essential comparison used to establish causal direction was obtained by noting a 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. Both Bakeman and Helmreich (1975) and Carron and Ball (1977) have applied the cross-lagged panel correlation technique to cohesiveness research with aquanauts and male ice hockey players respectively. (In each case, a stronger case was made for performance causing higher cohesion than for higher cohesion causing better performance.)

Gill (1978) recommends caution in accepting Carron and Ball's causal interpretation since synchronicity, a basic assumption

Another consideration is the problem in measuring performance success. In past research studies, the team's win/loss percentage was the most commonly used index of team effectiveness. As Lowe (1973) pointed out in his observations of Little League baseball, good performance does not automatically result in good performance outcome and bad performance does not necessarily produce an unfavorable performance outcome. Martens (1970) supports the contention that some teams value affiliation more than winning; thus, success is achieved through close interpersonal relations. Other groups consider an improvement from the last season the criterion measure of performance success (Martens, 1975). With the changing of team players, coaches, and team goals, the use of measures other than win/loss percentage is both tenuous and, at times, impossible.

Another common problem in cohesion-performance research has been the failure to draw a distinction between teams having different types of performance structures. Landers and Luschen (1974) suggest that an important structural difference exists between interacting teams and coacting teams. On the basis of their review of evidence concerning the two types of sport teams, they found that a positive cohesion-performance relationship existed for most interacting sport groups while a negative relationship was more often charateristic of coacting sport groups.

The experimental designs developed by many researchers have added to the ambiguity surrounding the cohesiveness dilemma. As Gill (1978, pg. 145) states, "Failure to consider the time dimension

underlying the cross-lagged analysis, was violated. Synchronicity, as discussed by Kenny (1975) and Calsyn (1976), requires that the two variables (cohesion and performance) be measured at the same point in time. In the Carron and Ball study, aggregate performance measures were derived from summing game win/loss data while cohesiveness measures were obtained at a single point in time. Empirical findings state that variables measured closer in time correlate more highly than those measured further apart in time and, therefore, violations of synchronicity may invalidate causal interpretations of cross-lagged differentials to some degree.

In order to meet the synchronicity assumption, several procedures would have to be followed. As Bakeman and Helmreich (1975) did, data would have to be gathered continuously on cohesion as well as performance. In fairness to the Carron and Ball (1977) study, the limits of that requirement are readily apparent when one considers the length of a competitive season and the number of teams involved in a given league.

In addition to these conceptual, definitional and methodological problems, cohesion-performance research may be influenced by other mediating variables. As was indicated earlier, gender of the subject may be one variable affecting the cohesion-performance relationship. Because past cohesion research studies involving women have been extremely rare, incorporation of female athletes into studies will provide additional information for those interested in the effects of cohesion and performance success in a sport setting.

Other variables affecting the cohesion correlations may be the ability level of the participants and tenure or stability of group members. In the past, for example, research subjects were primarily members of experimentally contrived groups, players on high school teams, or members of college intramural sport groups rather than members of well established intercollegiate athletic teams. Various social structures and ability levels are reflected through each of the different small group situations. Therefore, as Melnick and Chemers (1974) recommend, researchers should make use of the "tenured" groups that have been in existance long enough to establish a clearly defined social structure. These teams would be preferable over weaker, more transient groups.

CHAPTER 3

METHODS AND PROCEDURE

This chapter shall provide information concerning subjects, the Sport Cohesiveness Questionnaire, and procedures.

Subjects

The coaches of 23 intercollegiate field hockey teams were contacted to see if they and their top 15 athletes would be willing to participate in the study. Of the 14 coaches and athletic teams who indicated a willingness to participate, only nine followed through in completing all the necessary questionnaires throughout the season.

The 132 subjects were members of eight teams in the Mid-Atlantic Field Hockey District and one team in the North East District during the 1978-79 intercollegiate field hockey season. All team members were female undergraduates with a mean age of 19.66 years.

The Mid-Atlantic Field Hockey District was selected because the various teams represented a wide range of skill and because the better teams were indicative of top-level intercollegiate field hockey in the United States. In the past four years, this district has produced the first and second place finishers at the National Field Hockey Tournament for the Association of Intercollegiate

Athletics for Women (A.I.A.W.). The team from the North East District was selected because of the number of games played against Mid-Atlantic teams during the regular season.

Questionnaire

The Sport Cohesiveness Questionnaire developed by Martens, Landers and Loy (1972) (see Appendix A) was the instrument used to assess the bidimensional construct of cohesion. Subjects responded to seven questions designed to obtain: 1) the degree of interpersonal attraction among team members, 2) the influence of each team member on the coach and other team members, 3) the perceived value of membership on the team, 4) the degree to which an individual possesses a sense of belonging to the team, 5) the degree of enjoyment in participating with teammates, 6) the level of teamwork present in the team, and 7) the degree to which the team is closely knit. Responses for each cohesion measure were given on a 9-choice semantic differential scale. In all cases, a lower score reflected a higher cohesion level. An eighth measure of cohesion was obtained by summing each of the seven individual scores. According to Carron and Ball (1977) the composite measure is a more reliable estimate of cohesion than any single factor since it is a composite of seven individual measures and it provides a greater range of scores with which to statistically compare the cohesion-performance relationship. It should be noted, however, that the original designers of the tool never provided for a composite score.

The questionnaire also assessed the participation motivation of the athletes on a 10-question scale developed by Martens, Landers and Loy (1972). The scale was constructed on the basis of a more general Orientation Inventory tool developed by Bass (1962). The questions required a forced choice response (most true versus least true) to 10 statements. These statements represented each of the three motives for participation including self, task and affiliation.

Another participation-motivation scale, this one consisting of three questions, examining the respondent's participation orientation was also included in the questionnaire. Responses for the same three participation measures were given on a 9-choice semantic differential scale. In all cases, a lower score reflected a stronger representation of the specific motive being examined.

In addition to cohesion and participation motivation, the satisfaction of team members was measured. Two questions dealt with the individual's satisfaction with their own performance during the season and a third question examined the players' satisfaction from playing on their respective field hockey teams. These questions were combined to form a fourth measure of satisfaction referred to as composite satisfaction. Composite satisfaction was obtained by summing each of the three individual scores.

Procedures

A letter explaining the purpose of the investigation, a copy of the questionnaire and a response card indicating their willingness to participate was sent to 23 coaches of selected four-year collegiate field hockey teams. The response card was to be returned along with a copy of the team's regular season schedule. Follow-up material was sent to all coaches who indicated a willingness to participate.

Questionnaires were administered by the coach to the players at a time when all team members could simultaneously complete the questionnaire. Before the subjects responded to the first questionnaire, each person was given a copy of the Human Subject Consent Form, outlining the intent and procedures involved in the study. Although each subject had a copy of the form, the coach was requested to read it aloud to the players in addition to the directions for each part of the questionnaire. Coaches were further instructed not to answer any questions, make comments, or reveal information about the research at any point during the field hockey season.

The questionnaire was administered on three occasions, early in the season (prior to the completion of approximately two regular season games), at midseason (at the completion of approximately half of the regular season games), and at postseason (at the completion of all regular season games). During the final administration, the win/loss record at midseason and postseason was tabulated by the coaches and given to the experimenter. The records of team performance outcome were converted to percentage of games won. Successful

groups (60-100% wins) and unsuccessful groups (0-50% wins) were then established to facilitate analysis of data.

CHAPTER 4

RESULTS

This chapter will discuss the results of the study and the statistical treatment of the data.

Cohesion-Performance

The win/loss percentages obtained on the nine intercollegiate field hockey teams at mid and post season are listed in Table 1. Teams in the successful or winning category won 60% or more of their regular season games while teams in the unsuccessful or losing category won 50% or less of their regular season games. The teams classified into these categories remained the same throughout the season.

In order to test the first hypothesis that the cohesiveness of winning teams would be greater than the cohesiveness of losing teams, the Sport Cohesiveness Questionnaire test items were analyzed with a Multivariate Analysis of Variance (MANOVA) procedure. As was suggested in the Gill (1978) review article, interrelationships among questionnaire items have not been established nor is there a standard procedure for determining a single overall cohesion score. For this reason, each of the individual measures as well as composite cohesion were analyzed. Results from the MANOVA tests (see Table 2)

Table 1. Mid and Post Season Performance Percentages for Winning and Losing Intercollegiate Field Hockey Teams

Division	Team	Midseason Winning Percentage	Postseason Winning Percentage
Winners			
	West Chester State College	100%	80%
	Shippensburg State College	86%	69%
	Pennsylvania State University	78%	76%
	University of Delaware	78%	71%
	Lock Haven State College	67%	69%
Losers			
	Bucknell University	50%	46%
	State University of New York at Cortland	43%	27%
	Indiana University of Pennsylvania	33%	31%
	Lebanon Valley College	33%	29%

Table 2. Multivariate Tests of Significance for Early, Mid and Post Season Cohesion, Participation Motivation and Satisfaction Variables

Administration Time	Test	Value	Approx. F	D.F.$_h$	D.F.$_e$	p
Early Season	Pillais	.41	4.83	16	113	.00001
	Hotellings	.68	4.83	16	113	.00001
	Wilks	.59	4.83	16	113	.00001
	Roys	.41				
Midseason	Pillais	.44	4.93	16	102	.00001
	Hotellings	.77	4.93	16	102	.00001
	Wilks	.56	4.93	16	102	.00001
	Roys	.44				
Postseason	Pillais	.47	5.47	16	100	.00001
	Hotellings	.88	5.47	16	100	.00001
	Wilks	.53	5.47	16	100	.00001
	Roys	.47				

indicated that winners were significantly different from losers at early, mid, and post season.

Because the F for the MANOVA was significant, follow-up Univariate Analysis of Variance (ANOVA) tests were conducted. Summarized in Table 3 are the ANOVA results for the relationship between performance outcome at early, mid and post season and the seven cohesion measures and composite cohesion. In order to keep the overall experimental alpha at .05, the level of significance for the ANOVA tests was adjusted to a .001 level of significance. Results indicated that on composite cohesion and the individual measures of enjoyment, teamwork and closeness, the winners were significantly more cohesive than losers for each administration date, thus supporting the hypothesis that members of winning teams would be more cohesive than members of losing teams.

Gill (1978) further suggests that covariance analysis is necessary to discuss the contention that a causative relationship exists between cohesion and performance outcome. In this case, the Multivariate Analysis of Covariance (MANCOVA) of post season cohesion holding early season cohesion constant was significant, Approx. $F = 3.10$ $(7,101)$, $p < .005$. Therefore, follow-up Analyses of Covariance (ANCOVA) were undertaken to determine the significance of each post-season cohesion question holding the corresponding early season cohesion question constant (see Table 4). Results indicated that significant differences existed for enjoyment, teamwork, closeness and composite cohesion. After comparing the results from the ANCOVA

Table 3. Analysis of Variance Comparing Winners and Losers on Cohesion, Participation Motivation, and Satisfaction at Early, Mid, and Post Season

Variables	Administration Time	df	F	p
Cohesion				
Interpersonal Attraction	Early	1,129	2.25	.1356
	Mid	1,124	2.47	.1184
	Post	1,118	9.82	.0022
Power/Influence	Early	1,129	2.71	.1020
	Mid	1,123	1.09	.2986
	Post	1,118	8.86	.0035
Enjoyment	Early	1,129	13.78*	.0003
	Mid	1,122	14.63*	.0002
	Post	1,116	17.18*	.0001
Sense of Belonging	Early	1,129	6.72	.0106
	Mid	1,122	2.41	.1231
	Post	1,116	5.06	.0264
Teamwork	Early	1,129	41.69*	.0000
	Mid	1,121	55.81*	.0000
	Post	1,116	67.66*	.0000
Closeness	Early	1,128	35.51*	.0000
	Mid	1,121	25.89*	.0000
	Post	1,116	42.33*	.0000
Value of Membership	Early	1,129	8.97	.0033
	Mid	1,121	6.23	.0139
	Post	1,116	11.58*	.0009

Table 3. Continued.

Variables	Administration Time	df	F	p
Composite Cohesion	Early	1,128	36.47*	.0000
	Mid	1,120	24.64*	.0000
	Post	1,116	40.49*	.0000
Participation Motivation				
Semantic Differential				
Affiliation	Early	1,129	1.77	.1863
	Mid	1,124	1.27	.2615
	Post	1,118	.65	.4209
Task	Early	1,129	6.39	.0127
	Mid	1,123	4.78	.0306
	Post	1,118	3.59	.0604
Self	Early	1,129	.54	.4630
	Mid	1,124	.08	.7822
	Post	1,118	3.45	.0658
Forced Choice				
Affiliation	Early	1,128	2.04	.1560
	Mid	1,119	.02	.8996
	Post	1,116	.83	.3654
Task	Early	1,128	1.67	.1985
	Mid	1,119	.01	.9057
	Post	1,116	.15	.7028

Table 3. Continued

Variables	Administration Time	df	F	p
Self	Early	1,128	.02	.8795
	Mid	1,118	.02	.8948
	Post	1,116	.41	.5221
Satisfaction	Early	1,128	18.69*	.0000
	Mid	1,118	14.55*	.0002
	Post	1,117	14.34*	.0002

*P < .001

Table 4. Analyses of Covariance of Each Postseason Cohesion Question Holding the Corresponding Early Season Cohesion Question Constant

Source of Variation	ss	df	ms	F	p
Interpersonal Attraction					
Within Cells	105.00	115	.91		
Regression	58.71	1	58.71	64.30	.00001
Performance	.70	1	.70	.77	.38309
Power/Influence					
Within Cells	113.03	115	.98		
Regression	42.37	1	42.37	43.11	.00001
Performance	2.40	1	2.40	2.44	.12076
Enjoyment					
Within Cells	131.26	113	1.16		
Regression	32.17	1	32.17	27.70	.00001
Performance	7.87	1	7.87	6.77	.01050
Belonging					
Within Cells	147.59	113	1.31		
Regression	45.38	1	45.38	34.75	.00001
Performance	1.89	1	1.89	1.44	.23191
Teamwork					
Within Cells	161.50	113	1.43		
Regression	58.21	1	58.21	40.73	.00001
Performance	33.21	1	33.21	23.24*	.00001
Closeness					
Within Cells	83.39	113	.74		
Regression	99.94	1	99.94	135.43	.00001
Performance	5.75	1	5.75	7.79	.00617

Table 4. Continued

Source of Variation	ss	df	ms	F	p
Value of Membership					
Within Cells	80.80	113	.72		
Regression	34.74	1	34.74	48.59	.00001
Performance	2.62	1	2.62	3.67	.05793
Composite Cohesion					
Within Cells	2758.73	113	24.41		
Regression	1461.52	1	1461.52	59.87	.00001
Performance	236.75	1	236.75	9.70	.00234

*p < .001

to the ANOVA's on Table 3, it is apparent that only the teamwork measure differentiated winners and losers on postseason cohesion when early season cohesion was covaried out. Regression figures on the ANCOVA indicated that there was a significant relationship between early season cohesion and postseason cohesion (see Table 5).

Rather than utilizing only correlational data, a further attempt was made to establish causative direction between cohesion and performance by using the cross-lagged panel technique employed by Carron and Ball (1977). Unlike the study by Carron and Ball, however, this study utilized spearman correlational statistics rather than pearson product moment correlations. The non-parametric measures were selected due to the relatively small sample size.

The spearman correlations (see Table 5) tested the hypothesis that higher team cohesion will not increase performance success, but performance success will lead to increases in team cohesion.

To test the influence of cohesion on subsequent performance, three composite measures of cohesion were compared with later measures of performance; namely, early season cohesion to midseason performance, midseason cohesion to postseason performance, and early season cohesion to postseason performance. These correlations were -.723, -.717, and -.617 respectively, with all correlations being significant at the .05 level of significance.

The negative signs associated with almost all of the correlations reflected the fact that successful performance was indicated by larger numbers whereas higher cohesion was reflected by lower numbers.

Table 5. Spearman Correlation Coefficients Between Performance and Subsequent Cohesiveness and Cohesiveness and Subsequent Performance

Cohesion Parameters	Early Season Cohesion to Midseason Performance	Midseason Cohesion to Postseason Performance	Early Season Cohesion to Postseason Performance	Midseason Performance to Midseason Cohesion	Midseason Performance to Postseason Cohesion	Postseason Performance to Postseason Cohesion
Friendship	-.118	-.283	-.300	-.420	-.536	-.536
Influence	-.126	-.142	.133	-.401	-.144	-.025
Enjoyment	.840**	-.767**	-.703*	-.798**	-.824**	-.717*
Belonging	-.571	-.517	-.367	-.698*	-.733**	-.667*
Teamwork	-.966**	-.833**	-.867**	-.958**	-.941**	-.900**
Closeness	-.852**	-.750**	-.695*	-.849**	-.874**	-.883**
Value of Membership	-.933**	-.644*	-.921**	-.861**	-.844**	-.770**
Composite	-.723*	-.717*	-.617*	-.874**	-.866**	-.733*

*p < .05 **p < .01

A schematic diagram representing an overview of the correlations between composite cohesion and performance and performance and composite cohesion is presented in Figure 1.

Examination of the correlations between the individual cohesiveness measures and the performance measures indicated that the individual measures of enjoyment, teamwork, closeness, and value of membership were primarily responsible for the significant overall composite cohesion-performance correlations. The magnitude of these correlations indicated that, contrary to the original hypothesis, higher cohesion was associated with increases in performance success.

To test the influence of performance success on team cohesion, correlations were obtained between a performance measurement and a composite cohesion measurement derived at either the same time or later; namely, midseason performance with midseason cohesion, midseason performance with postseason cohesion and postseason performance with postseason cohesion (see Table 5). The correlations were -.874, -.866, and -.733 respectively with the probability levels being significant at the .01, .01, and .05 level respectively.

Examination of the correlations between the individual cohesiveness measures and the performance measures indicated that the individual measures of enjoyment, teamwork, closeness, and value of membership were primarily responsible for the significant overall performance-composite cohesion correlations. The magnitude of these correlations indicated that the original hypothesis of better performance leading to higher levels of cohesion was supported.

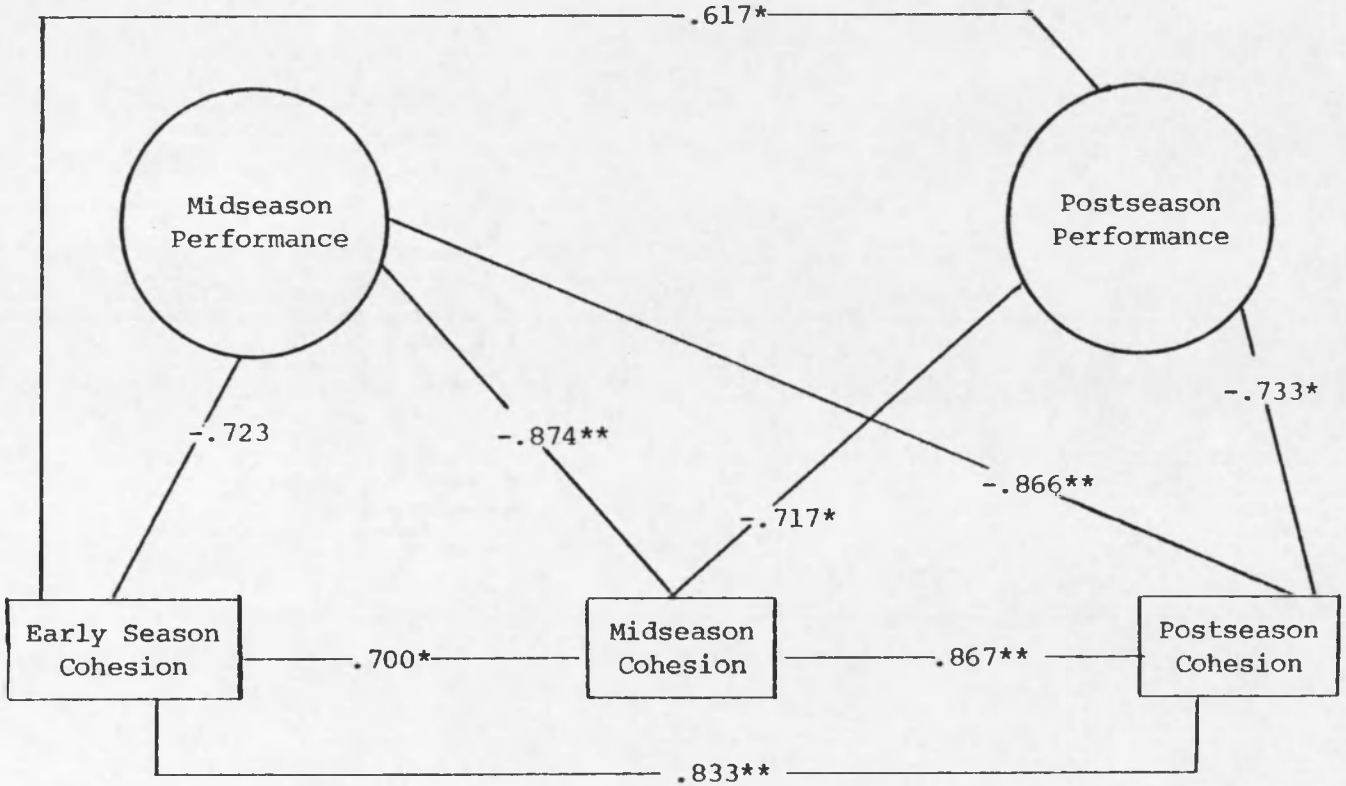

Figure 1. Schematic Outline of Spearman Correlation Coefficients for Cohesion and Performance.

*$p < .05$ **$p < .01$

Participation Motivation

It was hypothesized that no correlation would be found between participation motivation and performance. As with each cohesion measure, the three participation motivations as measured by both the forced choice tool and the semantic differential tool were analyzed using a MANOVA procedure (see Table 2). Results indicated that winners were significantly different from losers at early, mid, and post season. Although the *F* for the MANOVA was significant (see Table 2), the follow-up ANOVA tests (see Table 3) indicated that no significant differences existed between winners and losers on any of the participation motivations. As indicated earlier, the level of significance for the ANOVA was adjusted to a .001 level of significance.

Once again, the cross-lagged panel technique served as a model to assess the causal flow between participation motivation and performance. Spearman correlations for performance outcome leading to a specific type of participation motivation and for participation motivation leading to higher performance success are located in Table 6. Only one significant statistic resulted; namely, postseason performance outcome to postseason self motivation as measured by the semantic differential tool.

The next experimental hypothesis indicated that no correlation was expected between participation motivation and cohesion. The cross-lagged model for spearman correlations between cohesion and subsequent participation motivation and for participation motivation

Table 6. Spearman Correlation Coefficients Between Participation Motivation and Subsequent Performance and Performance and Subsequent Participation Motivation

Participation Motive	Early Season Motive to Midseason Performance	Early Season Motive to Postseason Performance	Midseason Motive to Postseason Performance	Midseason Performance to Midseason Motive	Midseason Performance to Postseason Motive	Postseason Performance to Postseason Motive
Semantic Differential Tool						
Task	-.167	-.487	-.104	-.139	-.342	-.407
Self	-.308	-.251	-.083	-.126	-.504	-.664*
Affiliation	.181	.209	-.333	-.345	.059	.083
Forced Choice Tool						
Task	-.034	-.233	-.217	-.067	.067	-.133
Self	-.412	-.033	.059	-.224	.059	.250
Affiliation	.420	.417	.250	.109	.101	.183

*p < .05 **p < .01

and subsequent cohesion are listed in Table 7. No significant statistics emerged supporting a cohesion to subsequent participation motivation relationship. For a particular participation motivation leading to subsequent cohesion, however, it was found that correlations between early season affiliation motivation measured on the forced choice tool to subsequent mid and post season cohesion proved to be significant at the .05 level of confidence.

Table 8 contains spearman correlations between the forced choice tool and semantic differential tool at early, mid, and post season. With the possible exception of affiliation motivation in which the overall shared variance was an average of 52%, there was consistently a low correlation between the two participation motivation tools. In addition, because low scores on the semantic differential tool indicated more of the participation motivation being tested, whereas low scores on the forced choice tool indicated less of the participation motivation being tested, negative signs associated with several correlations indicate a positive relationship between the two variables.

Satisfaction

In order to test the hypothesis that the satisfaction of winning teams would be higher than the satisfaction of losing teams, an ANOVA (see Table 3) was conducted comparing winners and losers on satisfaction at early, mid, and post season. Again, the ANOVA served as a follow-up analysis to the significant F on the MANOVA

Table 7. Spearman Correlation Coefficients Between Participation Motivation and Subsequent Cohesion and Cohesion and Subsequent Participation Motivation

Participation Motive	Early Season Motive to Midseason Cohesion	Early Season Motive to Postseason Cohesion	Midseason Motive to Postseason Cohesion	Early Season Cohesion to Midseason Participation Motive	Early Season Cohesion to Postseason Participation Motive	Midseason Cohesion to Postseason Participation Motive
Semantic Differential Tool						
Task	-.113	-.104	.000	.155	.220	-.034
Self	.293	.259	-.117	-.133	.361	.361
Affiliation	-.126	-.184	.083	.000	-.117	.317
Forced Choice Tool						
Task	.333	.167	.133	.033	.300	.167
Self	.333	.400	-.117	-.243	-.317	.067
Affiliation	-.683*	-.583	.067	.200	-.367	-.450

*p < .05 **p < .01

Table 8. Spearman Correlation Coefficients Between the Forced Choice and Semantic Differential Participation Motivation Tools

Variables	Correlation Coefficient	Significance	Percentage of Shared Variance
Early Season			
Affiliation	-.603	.043	36
Task	.139	.361	2
Self	.134	.366	2
Midseason			
Affiliation	-.867	.002	75
Task	-.776	.007	61
Self	.502	.085	25
Postseason			
Affiliation	-.667	.025	45
Task	0.000	.500	0
Self	-.723	.014	52

(see Table 2). Using the .001 level of significance, results indicated that winners were significantly more satisfied than losers at early, mid, and post season.

The cross-lagged technique was used to assess the causal flow between satisfaction and subsequent performance and performance and subsequent satisfaction (see Table 9). While no evidence was found for satisfaction increasing performance success, results indicated that the relationship between midseason performance and postseason satisfaction and between postseason performance and postseason satisfaction were significant at the .05 level of confidence. These results support the original hypothesis that performance success would increase the level of satisfaction. Figure 2 represents a schematic diagram of the relationship between satisfaction and performance.

Spearman correlations provided the data to assess the last two hypotheses; namely, that higher levels of satisfaction would increase later cohesiveness and that higher levels of cohesion would increase later satisfaction (see Table 10). Significant correlations were found between early season satisfaction and midseason cohesion, and early season satisfaction and postseason cohesion, early season cohesion and midseason satisfaction, and early season cohesion and postseason satisfaction. All of the significant findings supported the hypotheses. Figure 3 represents a schematic diagram of the relationship between satisfaction and cohesion.

Table 9. Spearman Correlation Coefficients Between Satisfaction and Subsequent Performance and Performance and Subsequent Satisfaction

Early Season Satisfaction to Midseason Performance	Midseason Satisfaction to Postseason Performance	Early Season Satisfaction to Postseason Performance	Postseason Satisfaction to Midseason Performance	Midseason Satisfaction to Midseason Performance	Postseason Satisfaction to Postseason Performance
-.529	-.467	-.517	-.672*	-.555	-.733*

*p < .05 **p < .01

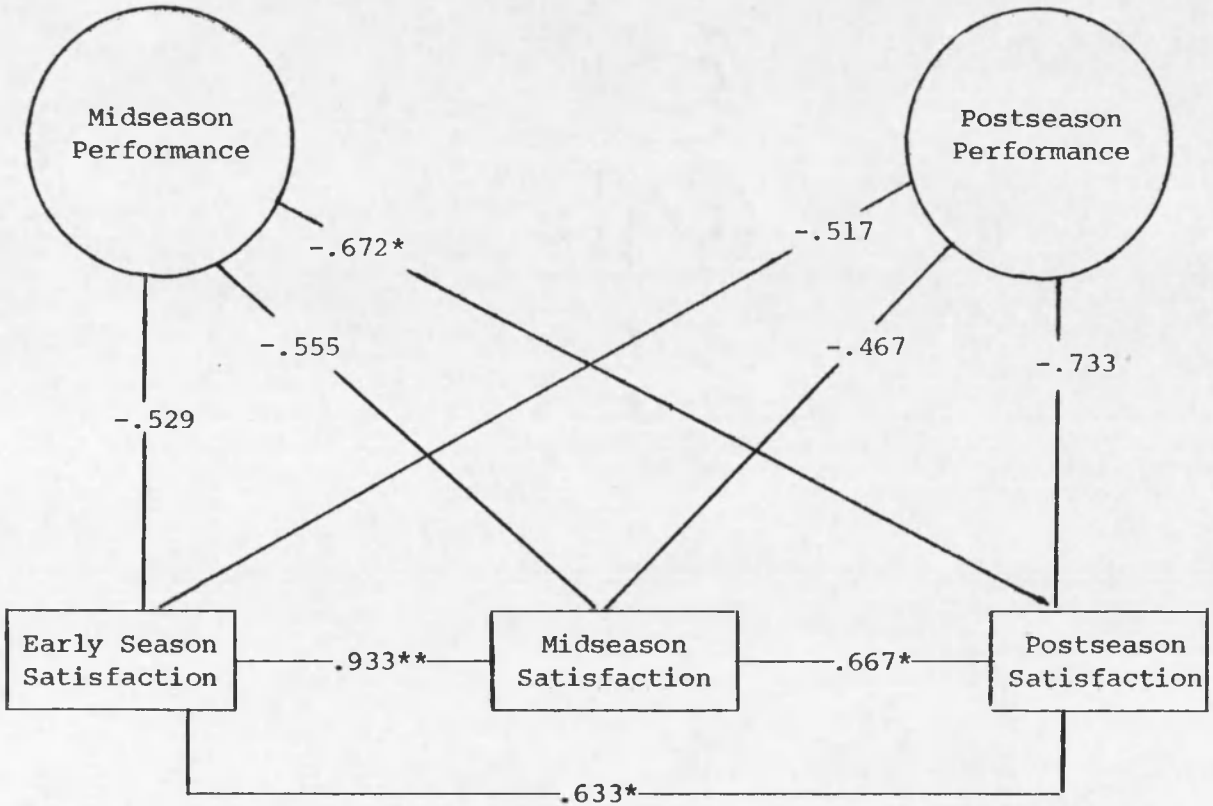

Figure 2. Schematic Outline of Spearman Correlation Coefficients for Satisfaction and Performance

*$p < .05$ **$p < .01$

Table 10. Spearman Correlation Coefficients Between Satisfaction and Subsequent Cohesion and Cohesion and Subsequent Satisfaction

Early Season Satisfaction to Midseason Cohesion	Midseason Satisfaction to Postseason Cohesion	Early Season Satisfaction to Postseason Cohesion	Postseason Satisfaction to Midseason Cohesion	Early Season Cohesion to Postseason Satisfaction	Early Season Cohesion to Midseason Satisfaction
.550	.817**	.767**	.567	.650*	.950**

*p < .05 **p < .01

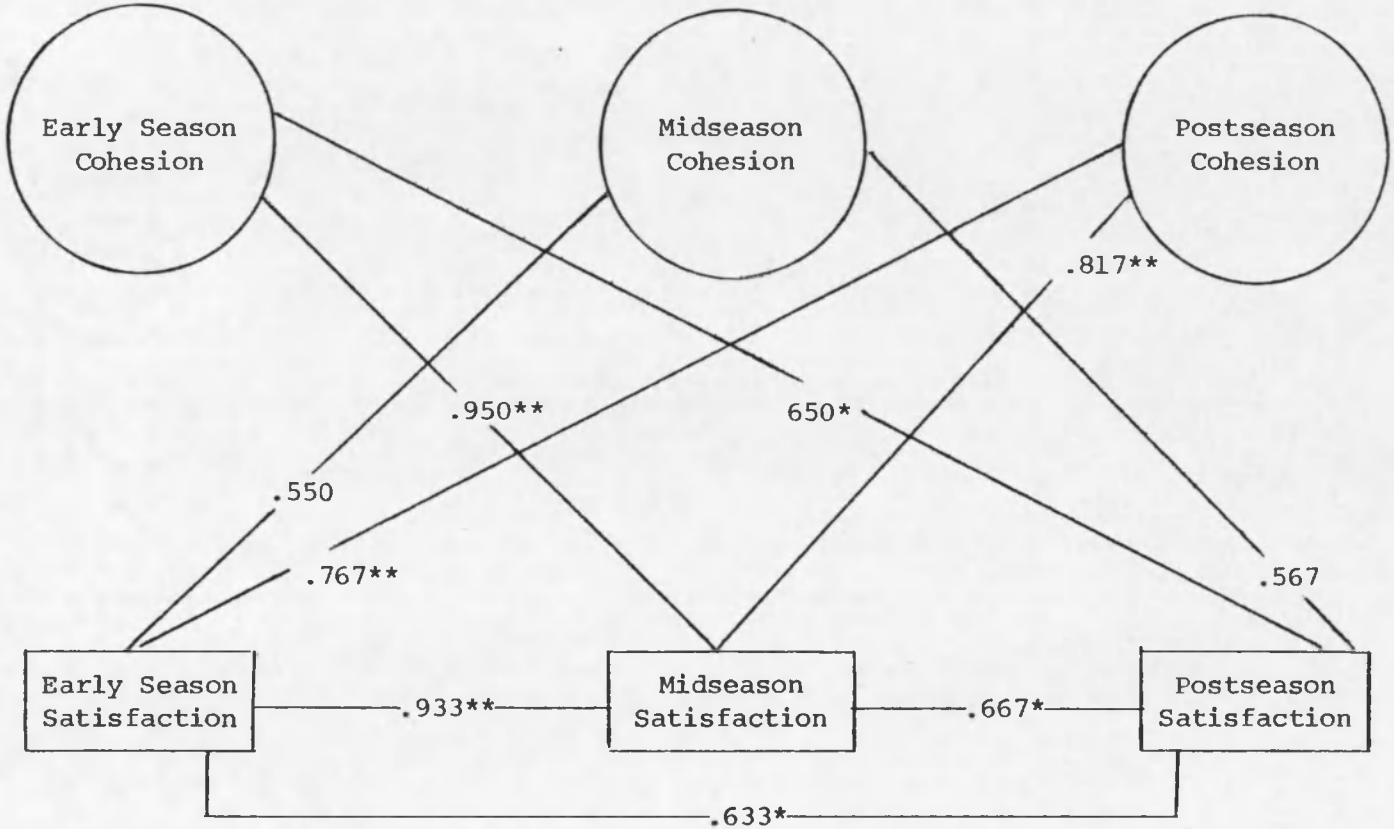

Figure 3. Schematic Outline of Spearman Correlation Coefficients for Cohesion and Satisfaction

*$p < .05$ **$p < .01$

Questionnaire

A factor analysis (see Table 11) was conducted for cohesion variables on the Sports Cohesiveness Questionnaire in order to determine which, if any, cohesion variables correlated with each other and also to examine any possible clustering of scores within the cohesion tool. The purpose of the analyses was to determine if future investigators would need to include all seven cohesion items when they attempt to assess a team's level of cohesion and to determine if the same clusters would occur as those obtained by Widmeyer and Martens (1978).

Factor loadings for each cohesion measure at the three administration dates are listed on Table 11. The first cohesion factor, labeled direct cohesion, accounted for 54.7% in early season, 52.2% in midseason, and 56.3% in postseason of the team's total level of cohesion. On the first factor, all of the direct measures of team cohesion loaded more heavily than the individual measures of team cohesion. The second factor, labeled sociometric cohesion, accounted for 14.5% in early season, 17.5% in midseason, and 16.3% in postseason of the variance in the team's level of cohesion. The two sociometric measures that did not load highly on the direct assessment factor did load heavily on this factor, whereas, none of the direct cohesion measures contributed strongly to this second factor.

Table 11. Unrotated Principle Factor Matrix of the Seven Cohesion Measures and Composite Cohesion

Measures of Cohesion	Factor Loadings					
	Direct Assessment			Sociometric Assessment		
	Early Season	Mid-Season	Post-Season	Early Season	Mid-Season	Post-Season
1. Interpersonal Attraction	.67	.57	.68	.50	.68	.61
2. Power/Influence	.52	.50	.61	.75	.71	.69
3. Enjoyment	.85	.84	.81	-.26	-.15	-.20
4. Sense of Belonging	.75	.81	.73	-.11	-.01	-.08
5. Teamwork	.81	.75	.81	-.08	-.38	-.20
6. Closeness	.81	.85	.86	-.16	-.21	-.21
7. Value of Membership	.72	.65	.72	-.31	-.20	-.39
Variance Percent	54.7	52.2	56.3	14.5	17.5	16.3

CHAPTER 5

DISCUSSION

Only the direct individual cohesiveness item, i.e., enjoyment, teamwork, closeness and value of membership rather than the interpersonal attraction and power/influence measures accounted for the greater cohesiveness of the winning teams compared to the losing teams. These results support the conclusions from past investigations (Martens and Peterson, 1971; Ball and Carron, 1976; Widmeyer, 1977) which have also indicated that direct measures of cohesion, as opposed to sociometric measures, provide the key source of differences between successful and unsuccessful groups. The most frequently cited experiments indicating a negative cohesion-performance relationship (Landers and Luschen, 1974; McGrath, 1962) utilized some type of interpersonal attraction measure to assess the team's level of cohesion. Results, therefore, indicate that care must be taken to determine the operational definitions used in various experiments before comparing the results of these investigations.

The spearman correlation coefficients which assessed the causal flow as being either from cohesion to performance ($r = -.723$, $-.717$, and $-.617$, $p < .05$) or from performance to cohesion ($r = -.874$, $-.866$, and $-.733$, $p < .05$) were high in both directions. These results are not in agreement with earlier researchers (Bakeman and Helmreich, 1975; Carron and Ball, 1977) who employed a cross-lagged panel analysis

and obtained support for a linear model between cohesion and performance. More specifically, performance leads to increased cohesion but cohesion does not lead to increased performance. Results from this study are more in agreement with the concept of a circular model or relationship between the two variables (Cartwright, 1968). As one variable increases, so does the other, leading to further increases in the first variable. Simply stated, as cohesion increases so does team performance which, in turn, causes an increase in team cohesion.

As was stated earlier, investigators have traditionally failed to consider the causality time dimension in either designing cohesion-performance experiments or in interpreting the results. Several researchers have noted a positive relationship between team performance and postseason cohesiveness (Landers and Crum, 1972; Peterson and Martens, 1972; Nixon, 1977). No results were presented, however, for the effect of cohesion upon later performance. Other investigators have examined the effects of early cohesion upon subsequent team performance and have obtained mixed results. Widmeyer (1977), Martens and Peterson (1971), and Ball and Carron (1976) all support a positive relationship between direct measures of cohesion upon performance success, while Arnold and Straub (1972) reported mixed results. No results were presented for the effect of performance upon later cohesiveness. Again one must question a possible circular relationship between cohesion and performance had the alternate hypothesis been tested in these studies. The fact that positve support has been found both for cohesion to later performance and performance to later cohesion,

plus the results of the present study, would tend to support more a circular model between these two variables. In light of the Carron and Ball (1977) findings and the scarcity of studies that have addressed the causality issue, it would be premature to completely discount the linear model until more investigations of causality have been conducted within sport settings utilizing the same experimental design.

The general failure to support winner-loser differences in participation motivation and any type of causal flow between performance and participation motivation is consistent with the results obtained by Carron and Ball (1977). The only exception was the present study's significant relationship between postseason performance and postseason self motivation as measured on the semantic differential tool. These findings are not consistent, however, with Martens' study (1970) in which he found losers were higher in affiliation motivation than winners while winners were higher in task motivation than losers. There may be differences in participation motivation depending upon skill level and type of competition in that varsity intercollegiate athletes were investigated in both the Carron and Ball (1977) study and the present study, whereas Martens investigated intramural sport athletes.

Spearman correlations for affiliation motivation leading to subsequent cohesion were the only significant statistics which resulted from the causal analysis between participation motivation and cohesion. One would expect that since affiliation participation

motivation indicated that participation was expected to enhance and maintain harmonious relationships among group members, strong correlations would exist with later cohesion which measured the general attraction of a group for its members.

The present study suggests that directly measured cohesion is much more important than participation motivation in predicting a team's performance level. Unlike the Ball and Carron (1976) study which originally suggested that to adequately examine the cohesion-performance relationship, the participation motivation of the athletes also must be analyzed, results from the present study indicated that individual member's motives for participating contribute little, if anything, to the team's performance. It is imperative to emphasize the danger in cross-study comparisons between participation motivation and other variables such as cohesion and performance since low overall correlation coefficients were obtained comparing the forced choice tool to the semantic differential tool in the measurement of an individual's participation motivation.

Although it was found that winners were more satisfied than losers, results from the cross-lagged causal analysis indicated that satisfaction did not lead to increases in performance success but that performance success did lead to increases in satisfaction. One would logically expect that highly skilled teams competing in a competitive field hockey district would be more satisfied with a higher win/loss record than would individuals on teams with a lower win/loss record. In other words, increases in satisfaction would be expected following

increases in performance success while decreases in performance success would result in decreases in team satisfaction.

Results from the present study indicated a circular causal relationship existed between cohesion and satisfaction in that correlations were high from cohesion to satisfaction and from satisfaction to cohesion. Simply stated, increases in cohesion lead to subsequent increases in satisfaction which further increases the level of cohesion. If individual members are more satisfied with their own ability and the team's performance outcome, this satisfaction is reflected by increases in the overall level of team cohesion. Teams who indicated lower satisfaction levels also experienced similar decreases in team cohesion.

The unrotated principle factor matrix indicated that although many researchers have utilized sociometric measures in their investigations (Landers and Luschen, 1974; McGrath, 1962) results from the present study indicated that direct assessment measures of cohesion, i.e. enjoyment, teamwork, closeness, sense of belonging and value of membership accounted for the greatest explanation of the team's overall level of cohesion at each of the administration dates. These findings lend support to the Widmeyer and Martens (1978) investigation which also showed direct assessment items rather than sociometric items as contributing the most significant measurement of team cohesion.

Because cohesion has been demonstrated to be at least a bidimensional contract, any measurement of a team's level of cohesion should include both sociometric and direct assessment items. If on the other hand, only one set of factors would be utilized to assess

cohesion, the direct measurement items would yield the largest percentage of the total variance in cohesion.

Major Findings

Taking into account the relatively small sample size of the experiment, results from the investigation must be viewed cautiously. Several conclusions become apparent:

1. Cohesiveness of winning teams were higher than the cohesiveness of losing teams.

2. Cohesiveness leads to subsequent increases in performance success.

3. Performance success leads to subsequent increases in team cohesion.

4. Performance success leading to self motivation as measured on the semantic differential tool, was the only significant correlation between participation motivation and performance success.

5. Affiliation motivation leading to subsequent cohesion, as measured on the forced choice tool, was the only significant correlation between participation motivation and cohesion tool.

6. Members of winning teams were more satisfied than members of losing teams.

7. Higher levels of satisfaction did not lead to increases in performance success.

8. Performance success did lead to an increase in satisfaction.

9. Satisfaction did lead to an increase in subsequent cohesion.

10. Cohesion did lead to an increase in subsequent satisfaction.

Conclusions

There is typically a serious lag in many fields between the discovery of new facts and the application of those facts by practitioners. Results of this investigation point to several key conclusions which have both theoretical and practical significance. Taking into consideration that the subjects in this study were intercollegiate field hockey players from nine teams in a highly competitive field hockey district, the present study would suggest the following conclusions:

1. In light of the fact that many coaches and players extol the values obtained from positive team interaction and feelings, results indicate that interest in fostering team cohesion would have a significant effect upon subsequent performance success.

2. It appears that high cohesiveness leads to better performance outcome as well as better performance outcome leading to high cohesiveness.

3. As teams experience continued performance success one could expect subsequent increases in self participation motivation.

4. Individuals in which the predominant participation motivation is an affiliative orientation would be expected to exhibit higher levels of team cohesion.

5. Member satisfaction would not be expected to lead to increases in performance success, whereas heightened levels of member satisfaction would be expected following a tradition of performance success.

6. Member satisfaction would be expected to lead to increases in team cohesion as well as high cohesion leading to increases in member satisfaction.

Recommendations

Based on the results of this study, the following recommendations become apparent for future research.

1. A tool with high reliability and validity figures should be developed to assess and measure specific factors contributing to team cohesion.

2. Further studies utilizing the same experimental design should be implemented to substantiate either a linear or circular causality model for the cohesion-performance relationship.

3. A comparison of the cohesion-performance relationship should be conducted among a variety of sport groups.

4. A comparison of various sport groups investigating several mediating variables such as sex, skill level and task demands should be undertaken to provide additional information concerning the cohesion-performance relationship.

APPENDIX A

THE SPORT COHESIVENESS QUESTIONNAIRE

PART I

RATE EACH MEMBER OF YOUR TEAM IN CHRONOLOGICAL ORDER AS LISTED BY THE TESTER IN RESPONSE TO THE FOLLOWING QUESTIONS.

ANSWER 1-15. On what type of friendship basis are you with each member of your team? If you know her very well and are good friends, rate her high on the scale. If you do not know her or are not good friends, rate her low on the scale (omit yourself)

1/2/3/4/5/6/7/8/9/
Good Friend — Not Good Friend

1. 1/2/3/4/5/6/7/8/9/
2. 1/2/3/4/5/6/7/8/9/
3. 1/2/3/4/5/6/7/8/9/
4. 1/2/3/4/5/6/7/8/9/
5. 1/2/3/4/5/6/7/8/9/
6. 1/2/3/4/5/6/7/8/9/
7. 1/2/3/4/5/6/7/8/9/
8. 1/2/3/4/5/6/7/8/9/
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10. 1/2/3/4/5/6/7/8/9/
11. 1/2/3/4/5/6/7/8/9/
12. 1/2/3/4/5/6/7/8/9/
13. 1/2/3/4/5/6/7/8/9/
14. 1/2/3/4/5/6/7/8/9/
15. 1/2/3/4/5/6/7/8/9/

ANSWER 16-30. For many reasons some of the gals on the team are more influential (important or leaders) than others. How much influence do you believe each of the other members of your team have with the coach and other gals (omit yourself).

1/2/3/4/5/6/7/8/9/
Very Influential — Not at all Influential

16. 1/2/3/4/5/6/7/8/9/
17. 1/2/3/4/5/6/7/8/9/
18. 1/2/3/4/5/6/7/8/9/
19. 1/2/3/4/5/6/7/8/9/
20. 1/2/3/4/5/6/7/8/9/
21. 1/2/3/4/5/6/7/8/9/
22. 1/2/3/4/5/6/7/8/9/
23. 1/2/3/4/5/6/7/8/9/
24. 1/2/3/4/5/6/7/8/9/
25. 1/2/3/4/5/6/7/8/9/
26. 1/2/3/4/5/6/7/8/9/
27. 1/2/3/4/5/6/7/8/9/
28. 1/2/3/4/5/6/7/8/9/
29. 1/2/3/4/5/6/7/8/9/
30. 1/2/3/4/5/6/7/8/9/

ANSWER 31-33. There are many specific reasons for playing field hockey. These reasons can usually be described in three general ways: (1) To be with the gals you like; (2) To play a sport that you like; and (3) To have your friends admire your ability. Using the scale below, indicate how important each of these reasons were for you.

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

Very Important — Not at all Important

31. To be with the gals. 1/2/3/4/5/6/7/8/9/
32. To play field hockey. 1/2/3/4/5/6/7/8/9/
33. To be admired. 1/2/3/4/5/6/7/8/9/

ANSWER 34. In reference to the scale below, how much did you like playing field hockey with this particular group of gals?

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

Enjoy much — Enjoy very little

ANSWER 35. How strong a sense of belonging do you feel you have to this team?

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

Very Strong — Hardly any at all

ANSWER 36. How good do you think the teamwork is on your team?

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

Very Good — Not Good at all

ANSWER 37. How closely knit to you think your team is?

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

Very Close — Not Close at all

ANSWER 38. Compared to other groups that you belong to, how much do you value your membership on this field hockey team?

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

Value Very Much — Value Very Little

PART II

BELOW ARE 20 STATEMENTS ABOUT PLAYING FIELD HOCKEY WITH YOUR TEAM. PLEASE READ EACH ONE AND WRITE DOWN YOUR FEELING ACCORDING TO THIS SCALE.

/1	/2	/3	/4	/5
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

_____ANSWER 39. I feel that being on this team gives me a chance to make friends.

_____ANSWER 40. I believe that most of my teammates <u>believe in</u> things that I do <u>not</u>.

_____ANSWER 41. Most of my teammates will help me if I need help.

_____ANSWER 42. The coach is more concerned about herself and the other gals than me.

_____ANSWER 43. The coach always tries to do the right thing for the team.

_____ANSWER 44. I do not much like the gals on this team.

_____ANSWER 45. All of my teammates are kind of dull and do not think seriously about important things.

_____ANSWER 46. I feel that there is plenty of chance to get ahead on this team.

_____ANSWER 47. I have not made close friends with any of the gals on this team.

_____ANSWER 48. Our coach tries to help me as much as she can.

_____ANSWER 49. I do not pay much attention to what the coach or the other gals say; I believe in making my own decisions.

_____ANSWER 50. I feel that I have some really good friends among my teammates.

_____ANSWER 51. I believe that playing on this team is boring.

_____ANSWER 52. The other gals on the team are willing to help me when I need it.

_____ANSWER 53. Most of my teammates are stubborn. No amount of argument will change them.

_____ANSWER 54. Just a few of my teammates in this group are open-minded; most of them are unreasonable.

_____ANSWER 55. The coach of our team doesn't really know field hockey. She just got stuck with the job.

_____ANSWER 56. Sometimes I like playing with these gals, but most of the time I would prefer to play with another team.

_____ANSWER 57. Most of my teammates would willingly sit the bench if it would help the team.

_____ANSWER 58. I believe that most of my teammates are out for their own glory, and care little about the team.

PART III

THIS PART OF THE TEST CONSISTS OF 10 STATEMENTS. FOR EACH ONE, INDICATE IN THE MOST ANSWER SPACE WHICH ONE OF THE THREE CHOICES, 1, 2, OR 3, IS MOST TRUE, OR MOST PREFERRED, OR MOST IMPORTANT. THEN CHOOSE THE LEAST TRUE OR LEAST PREFERRED OF THE THREE CHOICES AND WRITE 1, 2, OR 3, IN THE LEAST ANSWER SPACE. IF 1 IS MARKED FOR THE MOST, THEN EITHER 2 OR 3 SHOULD BE MARKED UNDER THE LEAST.

One of the greatest satisfactions in playing field hockey is:

1. recognition for your efforts
2. the feeling of a job well done
3. the fun of being with friends

ANSWER 59. (Most_____)
ANSWER 60. (Least_____)

If I had my choice, I would like to be:

1. the coach whose planning pays off in victory
2. the star player
3. elected captain by my teammates

ANSWER 61. (Most_____)
ANSWER 62. (Least_____)

I would like to be known among my teammates as:

1. a successful person
2. an efficient person
3. a friendly person

ANSWER 63. (Most_____)
ANSWER 64. (Least_____)

When playing field hockey I enjoy:

1. just being with the gang
2. the feeling of accomplishment from doing something well
3. being praised for some achievements

ANSWER 65. (Most_____)
ANSWER 66. (Least_____)

I think I play best when:

1. I practice hard
2. I play with a group of gals I like
3. my efforts are rewarded

ANSWER 67. (Most_____)
ANSWER 68. (Least_____)

When playing field hockey I like:

1. being appreciated by the coach
2. being satisfied personally with my performance
3. being with friends whom I can have a good time

ANSWER 69. (Most_____)
ANSWER 70. (Least_____)

Nothing is worse than:

1. embarrassing yourself while playing
2. the team losing the game
3. letting your teammates down

ANSWER 71. (Most_____)
ANSWER 72. (Least_____)

I play best when my coach:

1. works with me individually
2. pushes me to work harder in practice
3. is friendly toward me and the other gals

ANSWER 73. (Most_____)
ANSWER 74. (Least_____)

I would prefer:

1. that my teammates consider me a friend
2. that my teammates look up to me
3. that my teammates consider me an important part of the team

ANSWER 75. (Most_____)
ANSWER 76. (Least_____)

I prefer a captain of the team who:

1. gets the job done
2. makes herself respected by her teammates
3. is a friend of mine

ANSWER 77. (Most_____)
ANSWER 78. (Least_____)

USE THE FOLLOWING SCALE TO ANSWER THE NEXT THREE QUESTIONS:

1/2/3/4/5/6/7/8/9/
Very Satisfied — Not Satisfied at all

_____79. How satisfied are you with your general play so far this season?

_____80. How satisfied are you with the way you are playing your position on the field?

_____81. In general, considering the coach, your teammates, and everything, how satisfied are you individually being on this team?

APPENDIX B

MEANS AND STANDARD DEVIATIONS FOR WINNING AND LOSING TEAMS AT EARLY, MID, AND POST SEASON

Variables		Early Season	Mid-Season	Post-Season	Early Season	Mid-Season	Post-Season
Cohesion							
Friendship	M	3.08	3.04	2.69	4.02	3.36	3.38
	SD	1.03	1.15	1.08	1.30	1.14	1.32
Influence	M	3.87	3.81	3.42	4.46	4.01	4.06
	SD	1.02	1.11	1.05	.98	1.01	1.29
Enjoyment	M	1.65	1.47	1.59	2.19	2.29	2.33
	SD	.71	.87	.74	1.42	1.48	1.41
Belonging	M	1.85	1.55	1.26	2.86	2.69	2.42
	SD	1.36	1.42	1.34	2.17	2.28	1.88
Teamwork	M	2.09	1.95	1.79	3.75	3.78	3.92
	SD	.84	.88	.96	1.94	1.81	1.80
Closeness	M	1.88	1.62	1.45	3.88	3.46	3.46
	SD	1.28	1.25	1.09	2.23	2.14	1.94
Value of membership	M	1.84	1.48	1.15	2.19	2.11	2.12
	SD	.81	.86	.86	1.48	1.58	1.48
Composite cohesion	M	16.19	16.14	14.63	23.34	21.85	21.79
	SD	4.68	5.48	5.14	8.56	7.24	7.08
Participation Motivation Semantic Differential							
Affiliation	M	3.79	3.38	3.09	3.20	2.95	2.81
	SD	2.38	2.09	2.03	2.02	2.17	1.64
Task	M	1.08	1.44	1.12	1.42	1.52	1.39
	SD	.33	.43	.51	1.62	1.33	1.00
Self	M	5.72	5.55	5.09	6.12	5.67	5.85
	SD	2.48	2.52	2.42	2.32	2.09	1.98

Variables		Winners			Losers		
		Early Season	Mid-Season	Post-Season	Early Season	Mid-Season	Post-Season
Forced Choice							
Affiliation	M	19.66	19.93	19.79	20.37	20.00	20.31
	SD	2.81	2.77	2.71	2.85	2.85	3.51
Task	M	23.96	23.75	23.98	23.32	23.69	23.79
	SD	2.58	2.65	2.45	3.03	3.02	3.13
Self	M	16.38	16.32	16.23	16.31	16.31	15.90
	SD	2.86	2.91	2.80	2.75	3.15	2.61
Satisfaction	M	9.77	9.29	8.24	13.15	12.16	10.81
	SD	4.05	3.31	3.32	4.86	4.92	4.08

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