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THE EFFECTIVE COMMUNICATION IN SPORT SCALE

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THE PRELIMINARY DEVELOPMENT AND VALIDATION OF
THE EFFECTIVE COMMUNICATION IN SPORT SCALE.

By

Philip Sullivan

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ABSTRACT

THE PRELIMINARY DEVELOPMENT AND VALIDATION OF
THE EFFECTIVE COMMUNICATION IN SPORT SCALE.

By

Philip Sullivan

Within both applied and basic research in sport psychology, a vague concept of effective team communication has been broached. Discussions between teammates may be effective in that they enhance group properties and/or individual and collective performance. Due to a lack of theoretical basis and skewed measurement, this construct is presently misunderstood and under-utilized. This dissertation includes three sequential studies designed to provide a preliminary instrument for the construct of effective team communication in sports. A total of 681 athletes participated in this research. It was predicted that a five factor model, with specific relationships to team cohesion, would be found. A confirmatory factor analysis failed to find this structure, however an exploratory factor analysis using a randomly selected sample of half the total number of participants uncovered a preliminary three factor model. This structure was supported with a confirmatory factor analysis using the remaining random half-sample. The three emergent factors were defined as Close communication, Angry communication and Considerate communication. They are each sub-components of the originally hypothesized factors. The random generation of two smaller samples was maintained for all subsequent analyses.

Close communication and Considerate communication were both positively related to all aspects of cohesion as measured through the Group Environment Questionnaire. Angry communication was negatively related to task cohesion. This structure of effective communication was then discussed as a reflection of the Social Exchange Theory, and a representation of previous literature on effective communication in sports.

This work is dedicated entirely and without doubt to Susan.

ACKNOWLEDGMENTS

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CHAPTER 1

INTRODUCTION

Nature of the Problem

The study of social dynamics within sports has presented researchers, counselors, athletes and coaches with a variety of applications. Issues such as leadership, collective efficacy, team cohesion and group goal setting undoubtedly have great theoretical and practical value within sport teams. These issues all rely on one social process which may be the most important component of intra-team interactions. This process is communication, and for some reason, it has been continually unrecognized and neglected within sport psychology research.

Communication research in sport psychology. In reviewing research on communication in sports teams, one is struck on the one hand by the many comments lauding what is considered to be effective communication, and on the other by the relatively few empirical studies which address the issue. Further, these research studies do little to bring forth a unified operationalization of team communication.

Communication is a central issue in sports teams, as with other groups. In discussing sports teams, various authors have mentioned that team discussions should be open, honest, and direct (Schellenberger, 1981; Sullivan, 1993; Yukelson, 1996). The practical impact of communication is evidenced in the suggested contributions it makes to such established group level processes as cohesion (Widmeyer, Brawley & Carron, 1985),

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social support (Rosenfeld & Richman, 1997), goal setting (Widmeyer & Ducharme, 1997), and collective efficacy (Bandura, 1997; Zaccaro, Blair, Peterson, & Zazanis 1995).

Widmeyer and his colleagues (1985) proposed that open discussion of roles and expectations helps to facilitate a shared task-orientation. Subsequently, a cohesive group should be more likely to self-disclose, and become more receptive, thereby increasing both task and social cohesion (Carron & Denis, 1998). Verbal persuasion is appreciated as an explicit contributor to efficacy, both individual and collective (Bandura, 1997). Dale and Wrisberg (1996) used a performance profiling technique to describe how athletes characterize a successful team and coach. Team attributes included being able to communicate effectively, while the coach should be a good communicator. Overall, interpersonal exchanges within sports teams are quite influential on player satisfaction, team unity and individual and group performance. These effects may be what Dale and Wrisberg had in mind by using the term "effective" communication. Exactly what makes communication effective is unclear.

In line with Bales' (1950, 1965, 1970) conceptualization of intra-personal communication, some studies on communication within sports teams have emphasized a social versus task distinction. In 1966, Emerson analyzed the discussions of a mountain climbing team. He specifically focused on transcripts of verbal interactions, and only on task-oriented topics. These were further divided into positive or negative comments. Carron (1981) discussed the theoretical implications of a sports team as a small group. His discussion of communication also delineated all discussion into either task or social

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communication. Sport psychology is largely an applied field, and performance is a bottom line which motivates many researchers. It appears that an unfortunate (and improper) deduction has been made that task outcome (i.e., successful performance) is solely related to task communication.

Hanin (1992) chose to represent team communication in four dimensions: orientating, stimulating, evaluating, and task irrelevant. Orientation refers to those discussions by teammates regarding planning and coordinating activity (i.e., performance). Stimulation was defined as those messages aimed to motivate partners to maintain or increase activity level. Evaluation discussions were those that dealt with appraisals (either positive or negative) of the players' performance. Task irrelevant communication was defined as those "positive or negative messages having no direct bearing on the activity or task at hand" (p. 17). The conceptualization of all social communication as "task irrelevant" bluntly presents the author's value of such discussion. Hanin found that elite volleyball teams tend to display orienting communication prior to performance, stimulating communication during and evaluating communication after performance. Overall, teams' communication patterns appeared to be predominantly stimulation based, with relatively equal amounts of orientation and evaluation. The amount of task-irrelevant communication was minor.

An even more restrictive view of communication was offered by Williams and Widmeyer in a series of studies with varsity golf teams (Widmeyer & Williams, 1991; Williams & Widmeyer, 1991). These authors defined intra-team communication as how

often teammates gave each other tips about play during practices and tournaments. Despite this limited view, the authors still found communication to be effective in that it was a significant predictor of performance (Widmeyer & Williams, 1991) and cohesion (Williams & Widmeyer, 1991).

Given the complete view of effective communication discussed above, several difficulties are apparent with these reports. Even though a discrimination between task and social communication has a strong empirical founding (c.f., Bales 1950; 1965; 1970), sport psychology seems to have relegated social communication to a meaningless role. The result is a skewed conceptualization of a central social process. Further, the research has focused on quantitative analyses of verbal communication. Body language, tone of voice, and interpersonal spacing are not deemed relevant. How things are said is ignored while who says it and how often it is said are emphasized.

The above studies have focused on the role of task-oriented interpersonal relations in sport performance. Other research has examined the efficacy of a more social and qualitative meaning of communication. Sullivan (1993) was motivated by the capabilities of interpersonal communication as a team building process. She described a communication primer for teams and coaches designed around four key values: genuineness; understanding; valuing; and acceptance. Genuineness refers to the group's tendency to communicate in open and honest ways. Understanding refers to the degree to which the communication is clear and meaningful. Valuing refers to communication which promotes individual worth, while acceptance is the expression of inclusion (or rejection) of

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individual members. Specific suggestions for coaches and athletes to improve communication included effective listening (e.g., using eye contact, reflective listening and trying not to argue, but understand), and to recognize and resolve conflict, build on previous ideas and create feelings of trust, respect and understanding.

DiBerardinis, Barwind, Flanningam, and Jenkins (1983) instituted a training session for interpersonal relationships with a collegiate volleyball team. The authors found that improvements in communication skills were related to increased (individual) performance. Communication was operationalized through the Interpersonal Relationship Rating Scale (Hipple, 1970) which focuses on players' perceptions of the team as a whole. Items include the ability to listen to each other in an understanding way, tendency to trust one another, reactions to expressions of affection and warmth from one another, and reaction to conflict and antagonism. This instrument was also used by Sullivan (1995), who found that several qualitative aspects of team communication were related to cohesion.

While this scale provides an in-depth view of the social aspects of group communication, it was not specifically designed for athletes, and some items are not applicable to sports teams (e.g., our level of self-understanding, our degree of peace of mind). Further, the items do not discriminate between verbal and non-verbal layers of communication. One question asks the respondent to rate the team's level of giving love. This communication would typically involve verbal expressions, the amount and intent of physical contact and personal spacing while talking, as well as body language and facial

expression. Given the complete conceptualization of interpersonal communication, the scale itself seems quite inadequate to describe communication within a sports team.

Interestingly, in DiBerardinis et al.'s (1983) study on social styles of communication, the participants were all female athletes. The influence of gender in communication styles is one particular area that could be quite applicable to sport psychology. Research outside of sport suggests that there are very dominant gender differences in communication, with females being more focused on inclusion and acceptance of others, while males tend to communicate their independence and dominance (Tannen, 1991). These differences have been noted in a variety of social settings, including the task-oriented context of the workplace (Tannen, 1994). This pattern is apparent in some early work in sport psychology which found that female participants were not as responsive to achievement instruction as male athletes (McClelland, Atkinson, Clark & Lowell, 1953). Research on gender differences within social dynamics in sport is limited, but communication appears to be one construct which deserves more attention.

The study of communication has definite contributions to make to team dynamics in sports. These include the possibilities of enhancing team unity (Sullivan, 1993; Sullivan, 1995; Widmeyer et al., 1985; Williams & Widmeyer, 1991), individual performance (DiBerardinis et al., 1983) and group success (Dale & Wrisberg, 1995; Widmeyer & Williams, 1991). Taken as a whole, this research suggests that there exists a construct of effective communication which has probable consequences at the group and individual level within sport. Despite these findings, the overall measurement of communication

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within sports teams is quite narrow and atheoretetical. Typically, only verbal task-oriented messages are assessed. Social communication, non-verbal behaviors, and qualitative aspects of discussions have been neglected and addressed inconsistently. Furthermore, the operationalization of effective communication within sport psychology varies from study to study, author to author, and is in dire need of a proven theoretical framework.

Theoretical Framework. Social exchange models may offer the most appropriate theoretical framework to study communication within groups. As a school, these theories share certain concepts as social exchange frameworks. Interpersonal relations are understood to be interdependent exchanges of valued resources. People are motivated towards long term profits (e.g., reaping more resources than they sow) within these relationships (McGlintock & Keil, 1982). Communication is one means for the negotiation and exchange of these resources.

If social exchange models agree that the exchange relationship is based on the transference of resources, they offer different meanings for what a resource is. Typical operational definitions have stressed the characteristics of rewards and punishments. Kelly and Thibaut (1978) define a reward as "pleasures, satisfactions and gratifications the person enjoys" (p. 12). Subsequently, an exchange relationship is determined by "the capacity to reward (or punish) another specified actor" (p. 347). The value of these rewards depends on their inherent nature and the laws of supply and demand. One hundred dollars will not be as valuable to a millionaire as to a college student.

However, a strictly economic view of social exchange rewards is inadequate. Compared to economic resources, social resources are subjective and ambiguous. Issues such as obligations and trust, which may dominate social exchange, are unspecified and have no determined value. Thus, while social exchange is an economic process of sorts, it is one in which participants do not prioritize equivalences in value, but attempt to achieve a state of reciprocity determined by social, individual and group values (Cole & Schaninger, 1999).

Foa and Foa (1974) stated, regarding their resource theory, that a resource is any commodity, material or symbolic, that may be exchanged through interpersonal behavior. These commodities may include social rewards such as personal attraction, social acceptance, social approval, instrumental services, respect/prestige, and compliance/power (Blau, 1964), as well as loyalty, affection, contribution, and professional respect (Liden, Sparrowe & Wyne, 1997). Clarifying that any interpersonal exchange which may be deemed valuable does little to specify what a resource is. Foa and Foa provide a relatively parsimonious conceptualization of resources involved in social exchange. They determine six types of resources: love, status, services, goods, information and money. These are not meant to be the only kinds of resources, merely six broad types commonly exchanged through interpersonal relations. Love is any expression of affection, warmth or regard. Status is the expression of judgment which includes a degree of prestige. Information may include any messages of advice, opinion, instruction or enlightenment (so long as these messages are not love or status). Money refers to any currency with an objective value.

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Goods are tangible products or materials. Finally, services are any assistance of bodily effort or possessions.

These six resources can be classified according to two dimensions: concrete-symbolic and particularistic-universal. The former dimension refers to how exchanges may range from being overtly tangible and concrete to being largely determined by social or cultural interpretation. The latter dimension refers to the influence of interpersonal dynamics. Some resources may be powerfully influenced by who is providing them, others may be essentially the same regardless of the relationship. These two factors can represent a two dimensional space in which the six resources may be placed. While it may be obvious that money is essentially a universal and concrete resource, and love mostly a symbolic and particularistic resource, it is important to remember that each resource is best understood as a range, not a discrete point, in this two dimensional space.

Figure 1: Two dimensional representation of Foa and Foa's (1974) resources.

There are two key concepts in Foa and Foa's (1974) two dimensional
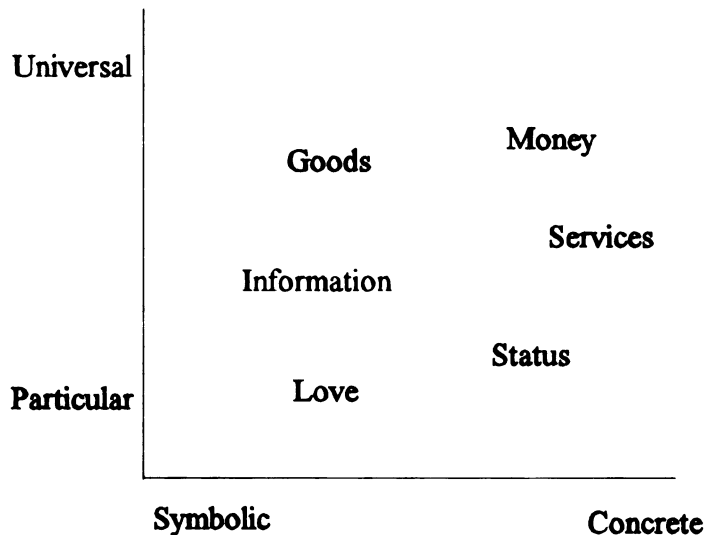
representation of resources. First, exchanges rarely take place in pure form. Social

behavior is extremely complex, and even the most simple of interactions (e.g., a

handshake) may actually contain two or more resources (e.g., love and status). Second,

resources tend to be exchanged with similar resources. However, because each resource

is actually a range, and these ranges may overlap, neighboring resources are exchanged

more often than non-neighboring ones.

With respect to the study of productive communication in sports teams

(specifically only between players), money, goods and services are not applicable. Love,

status and information are three resources that can be exchanged through interpersonal

discussions. If one examines some of the dimensions of communication already established

in sports teams, they do fit these types of resources. Aspects such as supportiveness, openness and level of giving love (DiBerardinis et al., 1983; Sullivan, 1995) fit within Foa and Foa's (1974) concept of love. Information includes such factors as tips on play (as measured by Williams & Widmeyer (1991); and Hanin's (1992) orienting, stimulating and evaluating). Finally Sullivan's (1993) notions of valuing, genuineness, understanding and acceptance all convey status (as well as love). Again, the three dimensions of money, services and goods (as defined by Foa and Foa) appear thus far to be inapplicable to intra-team communication in sports.

Not only is Foa and Foa's (1974) resource theory inclusive of intra-team communication as studied in sport psychology, its theoretical implications (e.g., that similar resources are more likely to be exchanged) offer a sound basis for deductive research. This model is proposed in the present study as the most applicable for the study of communication within sports teams.

Statement of the Problem

Previous research, in unsystematic fashion, has alluded to the construct of effective intra-team communication. Interpersonal relations may be effective in that they contribute to outcomes at an individual (e.g., player satisfaction, performance) and collective (e.g., cohesion, performance) level. Presently it is unclear what about communication makes it effective. The aim of this research is to design and validate an instrument to measure effective intra-team communication in sports using confirmatory factor analysis, and, if necessary, exploratory factor analysis. It is predicted that there is a

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multi-dimensional structure to 'effective" communication that is based on the exchange of various resources. Intra-team communication is presently limited to interactions between teammates. Communication in the present study is defined to include social as well as task, and verbal and non-verbal communication. A non-intrusive, paper and pencil survey was decided upon as an appropriate measure.

This research followed the guidelines established by Poole and McPhee (1985). In discussing methodology in interpersonal communication, they suggested the following guidelines for developing measurements. First, the instrument should have a sound conceptual basis. Based on this framework, the researcher should construct a preliminary sample of items. Following this, the measure should be designed, and then empirically evaluated for psychometric properties and design. Finally, the instrument should be evaluated in research practice. Foa and Foa's (1974) resource theory served as the conceptual basis for this study. The preliminary list of items was generated through a qualitative phase of research aimed towards a phenomenological assessment of what athletes perceive resources in effective team communication to be . This research focused on the design and testing of the instrument.

The final stage of measurement development, practical evaluation, was limited to the relationships between effective communication and team cohesion. This construct is chosen for two primary reasons. First, communication is a group level factor, and it is only appropriate that practical evaluation of this construct begin at the same level. Second, of the suggested group-level outcomes (e.g., collective efficacy, performance and

cohesion), cohesion is the only one which is presently operationalized in a valid way for both co-acting and interacting sports teams.

Delimitations

The participants in this study were delimited to university aged, athletes on organized sports teams. Any sport which requires group interaction during team sessions (practices if not games) is considered to be a team sport. Therefore, co-acting sports like track and field and wrestling, as well as interacting sports like hockey and football are considered team sports for the present purposes. This study also focused specifically on player-player communication. Therefore, the external validity of this instrument may be limited. It is presently recognized that the resultant survey may not be suitable for older or younger athletes, or those who participate at levels not typical of university students. Further, it cannot be said that this study would be applicable to team interactions involving coaches, athletic trainers, etc.

Basic Assumptions

The most obvious assumption of the present research is that a paper and pencil survey presents a valid reflection of intra-team communication. As discussed below, communication is a complex phenomenon and written communication can limit the expression of ideas. It is assumed that each item in the survey was interpreted with the same meaning by each participant, and that each response was a valid representation of their own meaning.

It is also assumed that individuals presented a good representation of a group

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phenomenon. Communication is by definition a social process. However, the present

choice of instrument focuses on individual perceptions of these social factors. This

process has been used before in studying social phenomenon within sports (e.g., Feltz &

Lirgg, 1998; Widmeyer et al., 1985). Still, the assumption is made that this is a valid and

reliable measurement of interpersonal behavior.

<u>Definition of Terms</u>

Carron and Hausenblas (1998) defined a group as "a collection of two or more

individuals who possess a common identity, have common goals and objectives, share a

common fate, exhibit structured patterns of interaction and modes of communication, hold

common perceptions about group structure, are personally and instrumentally

interdependent, reciprocate interpersonal attraction, and consider themselves to be a

group" (p. 13-14). Teams such as track and field and wrestling, whose members act

independently during performance still fit this definition. These teams are still

instrumentally interdependent in that their task-orientation as a group requires the

interaction of teammates (e.g., at practices and socials, to encourage and support each

other). To Carron and Hausenblas, a group is more than the collection of individuals and

their potential interactions; a group includes several shared attributes. While an individual

can occupy a role, and follow rules, he or she cannot have *shared* perceptions. This

requires more than one person, and interactions between these people. One further

clarification is made on this definition. This study will focus only on player-player

interactions. While individuals such as coaches, trainers, fans and parents may be

considered team members, it is currently held that the most essential team interactions are those between teammates. These are the focus of this dissertation.

For the present purposes, Carron and Hausenblas' (1998) definition was used. This is for a variety of reasons. First of all, it presents in detail the core characteristics of the group. It is not essential that every one of these criteria be present for a group to exist so long as characteristics do not exist which contradict these criteria. Secondly, this definition was designed with sports teams in mind, so it offers specific attention to some of the factors inherent in group dynamics in sport, such as common goals and objectives (e.g., to make the playoffs), and instrumental interdependence (e.g., performance requiring the conjoint or additive performances of the individuals. Finally, while sports teams were the focus of this definition, it is not too specific to eliminate generalizations. Other groups concerned with performance, such as bands, surgical teams, military units and work groups, can also fall under this definition.

In recent literature, the distinction between team and group has become blurred, and the two are used interchangeably (Chan, 1998; Moritz & Watson, 1999). In addition to avoiding a distinction that has evolved to little more than splitting hairs, this also allows for a decrease in redundancy. For the present purposes, the terms team and group were used interchangeably.

Communication is "a social process that involves the simultaneous exchange of symbols or behaviors (translatable into symbols) between two or more people" (Mabry & Barnes, 1980, p. 9). This simultaneous exchange means that the two (or more) individuals

communicating are actually sharing mutual influence. This is a reciprocal process and the reception of the communication will influence the sender, and subsequently, the message itself.

For the present purposes, the following operational definition of interpersonal communication was adhered to. "Interpersonal communication is a symbolic process by which two people, bound together in a relationship, provide each other with resources, or negotiate the exchange of resources" (Roloff, 1981, p. 30). This definition includes the components of communication stressed by Mabry and Barnes (1980), and is couched within the social exchange theory, which serves as the theoretical framework for this research.

Limitations

The primary limitation of this study lies in the potential lack of validity. Efforts have been made to work with a diverse sample of athletes. Male and female participants from a variety of sporting experiences and levels of competition present a rather homogeneous sample with respect to culture, education, and social-economic status. These shared characteristics could theoretically have a great impact on how individuals interpret and express meanings. Therefore, it is possible that the scale produced from this process may be specific only to these populations. This may affect both the construct validity of this measure (i.e., it may not be a good measure of intra-team communication because of these faults), as well as the external validity of the instrument.

CHAPTER TWO

REVIEW OF LITERATURE

Communication is a complex and ubiquitous social phenomenon. Sport, as a social activity, allows for one arena to study this process. Responsible research should include a thorough understanding of the phenomenon being addressed (i.e., communication) as well as the specific circumstances under which it is being studied (i.e., the social dynamics of sport).

Communication

Communication involves the sending and receiving of messages. The entire process involves at least two parties, a sender and a receiver. At some level, the messages must be encoded or transcribed, and later decoded. These coded messages may range from the mundane (e.g., two people speaking 'the King's English') to the sublime (e.g., the thrice ciphered messages the Germans used during the Battle of the Atlantic). Most communication occupies a moderate position compared to these two extremes. Take body gestures as one example. How one person holds her head or moves her hands is an encoded message, and the transcribing and decoding of this depends on a variety of factors, chiefly cultural and social influences. In some cultures, nodding one's head up and down signifies agreement, whereas in others, this message is displayed through a side to side bobbing motion of the head. If one is not aware of the culturally determined coding of these meanings, the message is missed or misread.

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The messages communicated are further complicated by medium and context. Medium refers to the means by which the message reaches the audience. This could be written, oral, non-verbal or even electronic. Each medium offers unique constraints on the message. What may be clearly understood as sarcasm in a face to face conversation may be easily misconstrued as serious if transmitted through e-mail. Finally, the context refers to the circumstances in which the message is transmitted and received. Specific circumstances may cause one to communicate the same message in a different fashion. Parents speaking in front of their children may choose to spell out words instead of pronouncing them. When speaking to teams, coaches may choose to use cliches so that the group will understand, whereas in one-to-one conversations, a more personal style would be followed.

One solitary communication, then, is the encoding of a message by a transmitter, which is sent via a medium, through a context, and received and decoded by a receiver. However, in only the most artificial situations are messages communicated discretely. Typically they overlap and interact. Interpersonal communication is not just a complicated process, it is a reciprocal one (Beebe, Beebe & Redmond, 1996). Just how one sits to listen to their best friend talk is in itself sending a message. In a common sports situation, a captain may be addressing his/her team. Some players may be listening intensely, others looking at their feet, avoiding eye contact. Perhaps two players talk quietly to each other, while one player merely rolls his eyes. To simply describe this situation as one player talking to the team is ridiculously incomplete.

Communication within groups can occur in a variety of fashions. The most obvious distinction is between verbal and non-verbal behavior. Verbal communication refers to those messages expressed as vocalizations. Non-verbal behaviors refer to any overt actions which transmit a message. This may include body language or use of interpersonal space. Verbal communication is itself often divided into social and task aspects (e.g., Bales, 1950, 1965, 1970). These dimensions refer to the orientation of the messages. Social communication refers to those discussions which address the social objective of the group (e.g., listening to someone vent their anger). Task communication refers to those discussions aimed towards the goals and objectives of the group (e.g., discussions of strategy, participative leadership discussions).

Non-verbal communication, while more subtle, is no less efficacious. These messages may be divided into proxemics, kinesics and paralanguage (Mabry & Barnes, 1980). Proxemics refer to how people use space. Personal spacing and distance between sender and receivers is in itself a part of the message. Kinesics refers to body movement. Gestures, rate and timing of (gross body or partial body) movement all help transmit a message in its entirety. Paralanguage refers to non-language vocalizations. Tone of voice, volume, and non-language utterances are all important aspects of communication.

Consider the following transcript of a hypothetical half time speech given by a coach to a team:

We are down by eight points, despite the fact that we have made countless unforced errors. We are giving them the game. If we choose to play the game as

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well as we know we can, there would be no question who the better team is. The big difference in this game is not skill, or ability or experience, it is concentration and desire. Once we decide to concentrate and give 100%, nothing, including that other team, can stand in our way.

These written words convey a message, however, imagine the coach saying this quietly, intently, with her hands in her pockets, standing in one place and making eye contact with each player in turn. Contrast this image with the same words being spoken by a coach, yelling and screaming, getting in the face of a select few players, stamping her feet, and kicking a garbage can over. While the words are the same, the message communicated is quite different.

All of these aspects of interpersonal communication are important in sport. Teams exist as social as well as task entities, and athletes and coaches are usually quite comfortable with using their bodies as instruments of communication. To fully conceptualize communication in sport, these dynamics have to be emphasized.

Communication appears to be one of, if not the most, essential social processes. Further, sports teams present characteristics of a prototypical group. Therefore, examination of intra-group communication within sports should be a fruitful empirical undertaking. This endeavor is aided by the rich history of studying group attributes and social dynamics within sports.

Team Attributes in Sport Psychology

While in pursuit of the shared objectives, groups such as sports teams operate

within dynamic environments. The circumstances in which groups exist have a definite impact on their internal structure and function. Levine and Moreland (1990) consider these circumstances to be the group ecology and divide them into physical, social, and temporal considerations.

The physical environment for sports teams may include training and performance facilities, as well as places used for social purposes. The actual physical proximity between members is one fact of the physical environment which can have a great influence on team dynamics. Prappavessis, Carron and Spink (1997) go so far as to state that decreasing the physical space within which a team operates, and subsequently increasing contact, will enhance team cohesion. This manipulation of the physical environment has long been recognized, and can be seen in the practices of team retreats and training camps in unfamiliar locations. The former U.S.S.R. national hockey team took this practice to extremes, housing the team in army barracks for 11 months a year (Dryden & MacGregor, 1989). The physical environment of the sports team also includes the actual equipment and clothing worn by players, often designed to enhance team identity and togetherness (Prappavessis et al., 1997; Yukelson, 1997).

The social environment includes the larger organizational setting (Alderfer & Smith, 1982), a superordinate organizational culture of individuals who are not members (Moreland & Levine, 1990). Sports teams often exist within larger organizations. University teams are part of an athletic department, professional teams may be owned by corporations, and club teams may be a wing of social or cultural clubs. Most teams exist

within conferences or leagues with superordinate rules and norms. In each of these cases, the culture of the larger system may have a profound effect on the team. Influential non-members could include booster groups, fan clubs, parents, and ex-members. These individuals may provide financial or other tangible support. The lobbying of citizens and municipal authorities regarding the public funding of stadiums (and possible franchise re-location) shows how influential these individuals can be on group performance.

Finally, groups exist in temporal environments. This may be seen in the characteristic stages of group development over time, as well as individual turnover. Sports teams, like all groups tend to follow a typical pattern of development. While there have been a variety of models proposed to describe this process, perhaps none have improved on Tuckman's (1965) stage model. This model involves five temporal stages: Forming, Storming, Norming, Performing, and Adjourning. When groups form, interpersonal exchanges based on attraction and information lead to shared orientations. Storming is characterized by competition over roles and dissatisfaction with emerging group structure. During norming, the group structure becomes finalized and the group itself more cohesive. Performing is marked by high task orientation and achievement. Finally, groups may progress to adjourning, when the shared duties are fulfilled, resulting in termination of the team.

In situations where the group is relatively stable, other temporal constraints are important. Sports teams may exist for decades, but with no one person continuously involved over that length of time. Considering these circumstances, an appropriate model

would be Moreland and Levine's (1993) model of group socialization. As new members enter groups, they tend to go through a process. First, potential members investigate the group. The group and the member seek a fit between individual and shared goals. After this time comes a phase of socialization, where the group attempts to change individual behavior so that it aligns with team functioning. Third is a maintenance stage, and the role negotiation processes culminate in an equilibrium that can maximize both team and member motives. Should this task break down, there comes a process of re-socialization to produce assimilation of the individual. Finally, the remembrance stage involves all parties engaging in a retrospective evaluation of the experience. According to this model, as new individuals join groups, there is a relatively constant balancing of individual and group needs. How well these are balanced will determine if, and for how long, the team member will remain. Within sports, team goals may include both task and social orientations (Widmeyer et al., 1985), and individual goals may include task performance, task outcome or social approval (Weiss & Chaumeton, 1992).

Social Dynamics in Sport Psychology

Sport psychology has always reflected an interest in social dynamics. This is mainly due to the practical concerns of group performance within sport. As researchers became more interested in collective performance in the sport setting, group level attributes such as cohesion, collective efficacy and social support have all received attention.

Perhaps the most studied social dynamic in sport psychology is team cohesion, also

know as team unity or camaraderie. Cohesion has been defined as "a dynamics process which is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (Carron, Brawley & Widmeyer, 1997, p. 3). According to this definition, cohesion is both transient and multi-dimensional. Certain sport teams may be overwhelmingly concerned with performance and have no concern with the social aspects of team functioning. These teams can still be considered cohesive as long as the members are united with respect to these objectives. Alternatively, some teams may have little interest in on-field performance, but stress the interpersonal relationships between members as the raison d'etre of the team's existence. Even though the players care little about the team's play, this group can also be considered cohesive.

In line with this definition, Widmeyer et al., (1985) presented an operationalization of cohesion as a multi-dimensional process. They separated two main dimensions of cohesiveness: individual attractions and group integration; and task and social cohesion. The resulting four factors are group integration - task (GI-T), group integration - social (GI-S); individual attraction to group – task (ATG-T), and individual attraction to group - social (ATG-S). GI-T refers to individual member's perceptions of the group's closeness around task-oriented issues (e.g., our team is united in trying to reach its goal for performance), while GI-S refers to those perceptions about the group as a social unit (e.g., our team would like to spend more time together in the off-season). ATG-T pertains to personal involvement with the group task (e.g., this team does not give me enough

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opportunities to improve my personal performance) while ATG-S is concerned with personal involvement with acceptance by and social interaction with the team (e.g., I enjoy other parties more than team parties). Each of these factors, and cohesiveness as a whole, is understood to be a continuous and dynamic attribute.

While cohesion is a central characteristic of a group, it is also important because of the practical considerations of having a cohesive team. Teams with a high sense of unity tend to outperform those with low unity, especially in interactional sports (Williams & Widmeyer, 1991). However, there have been findings which contradict this relationship. Lenk (1977) described a team whose performance increased as cohesiveness dissipated. Others have claimed that cohesion is unrelated to performance (Melnick & Chemers, 1974). In response to these issues, Mullen and Cooper (1994) conducted a meta-analysis of the cohesion performance relationship. Reviewing studies in a variety of settings, including sports, they found that there is a statistically significant relationship between cohesion and performance. There was also support for a predictive relationship between cohesion and performance, and these findings were most robust in studies involving sports teams.

Perceptions of team cohesion are influenced by a variety of sources. Group attributes like size, time spent together, and physical proximity can all alter team unity. Efforts to increase cohesion include exaggerating signs of distinctiveness or togetherness (e.g., team clothing, tattoos, symbols). Individual factors such as personality characteristics like dominance, submissiveness, friendliness, unfriendliness, and individual

and group orientation (Copeland & Straub, 1995), and physical and mental abilities (Dale & Wrisberg, 1996) can affect group unity. How each individual complements each other is also important when considering individual characteristics.

Intra-group dynamics can also alter team cohesion. These include leadership style within the group, with participative leadership being suggested as a contributor to team unity (Prapavessis et al., 1997). Also important are the roles team members are expected to fulfill. If these roles are clarified and accepted, individuals will know what is expected of them, and how they should work together, and the group should be more united (Copeland & Wida, 1996; Prapavessis et al., 1997; Yukelson, 1997). Group attributes include team identity and goals. Clear team goals can further perceptions of togetherness (Widmeyer & DuCharme, 1997). Finally, intra-group processes such as norms, communication and social support enhance team unity. Specific suggestions for effective team norms include cooperation (Prapavessis et al., 1997; Widmeyer et al., 1985), unselfishness and dedication (Dale & Wrisberg, 1996), and sacrifices, particularly by team leaders (Prapavessis et al., 1997). Communication which is open and supportive (Yukelson, 1996), and a sense of social support from teammates are also important (Rosenfeld & Richman, 1997; Yukelson, 1997).

It should also be noted that extra-team social factors can enhance the cohesion of the group. A perception of a common enemy has been shown to increase how united team members feel (Sherif, 1966). This may clarify team goals, or enhance perceptions of team identity.

The wealth of information on cohesion in teams is reflected in the literature on team building in sports. Various authors have applied this knowledge towards the practice goal of how to make a team more cohesive. For examples, see Yukelson (1997), Prapavessis et al., (1997), Carron and Hausenblas (1998), and Rosenfeld and Richman (1997).

Authors have gone so far as to state that cohesion is a necessity of group existence, that "there is no such thing as a non-cohesive group; it is a contradiction in terms. If a group exists, it is to some extent cohesive" (Donnely, Carron, & Chelladurai, 1978, p. 7). However, cohesiveness is not the absolute reduction of team dynamics. For members to perceive any amount of interpersonal attraction of group unity, there must be a certain amount of personal disclosure (Stokes, Fuehrer, & Childs, 1983). The interpersonal exchange of emotions and knowledge may be a more indispensable in-group process.

A second group dynamic that is currently generating a lot of interest in sports is collective efficacy. As a construct, collective efficacy refers to the amount of confidence in the group. It is also referred to as team confidence (Feltz & Lirgg, 1998). Collective efficacy was originally proposed by Bandura (1977, 1997) as a group level extension of self-efficacy. Bandura defined collective efficacy as the group's belief in their conjoint capabilities to produce given levels of attainment. A competing definition was offered by Zaccaro et al. (1995), who proposed that it is "a sense of collective competence shared among individuals when allocating, coordinating, and integrating their resources in a

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successful concerted response to specific situational demands" (p. 309). The concept being expressed through both of these definitions is that within a team, there is a sense of how well that group can accomplish what it aims to do, and that this issue is different from the sum of confidence in individual members or roles.

Collective efficacy is a very influential construct. Theoretically, efficacy influences both cognitions (e.g., aspirations, motivation), and behaviour (e.g. persistence). Like self-efficacy, it is influenced by the groups' previous mastery attempts, vicarious experiences, and verbal persuasion (Bandura, 1997). Other (potential) determinants include the level of group cohesiveness, group size, and leadership style (Carron & Hausenblas, 1998). A group's sense of confidence may have a great influence on the shared motivations (George & Feltz, 1995), as well as goal setting, performance, cohesion, and individual efficacy (Spink, 1990).

Several experiments have been conducted in which the relationship between collective efficacy and performance were explored. Hodges and Carron (1992) found that groups manipulated to have high efficacy responded more positively to poor performance outcomes than low self-efficacy groups. The pattern in these findings may be partially due to the inter-relations between collective efficacy and team cohesion. It appears that team confidence is related to cohesion, particularly the task-oriented aspects of cohesion (Paskevich, Brawley, Widmeyer & Dorsch, 1997). Like Feltz and Lirgg's (1998) study, Paskevich et al. investigated actual sports teams over a period of time.

Throughout its brief history, collective efficacy has been confronted with

conceptual problems. Chief among these is the level of operationalization for assessing a group's confidence (Moritz & Watson, 1999). While team confidence refers to a group-level attribute, it is typically measured at the individual level. Individuals tend to rate their own belief in the team's ability, and these ratings may or may not be statistically processed at the collective level. Currently, there is no clearly established operationalization for efficacy as a collective attribute (Bandura, 1997; Moritz & Watson, 1999).

This dilemma is part practical, part constructual. For whatever reason, it is hard to measure a group attribute, and at some point, operationalization typically occurs at the individual level. The assumption here, which may or may not be verified, is that each individual is capable of a valid perception of the group. This representation relies (almost explicitly) on interaction between teammates. Through actions and words, players communicate to one another individual and shared capabilities, expectancies, and beliefs. Any one individual would not be capable of offering a sound opinion of group efficacy if he/she were not aware of what his/her teammates could do, could not do, and wanted to do. At some point, these issues have to be communicated from one person to another.

If team cohesion and collective efficacy are two of the most practical social dynamics within sport, they still both rely on the interpersonal relations within the group. Rosenfeld and Richman (1997) presented a framework of social support in sports teams which is beneficial in understanding this component. The authors argue that social support as a process is best understood when viewed from the recipient's perspective. The actual support one may receive from teammates may take several forms: tangible,

informational, and emotional. These three dimensions can be further divided into eight factors.

Tangible support includes both personal assistance and tangible assistance. These refer to the perceptions that another is offering assistance in the form of money or products, or actual labour, services, or help, respectively. Team norms may foster an atmosphere where teammates are expected to offer what assistance they can to one another, and in turn, expect to rely on each other to fill these needs.

Informational support includes reality confirmation support, task appreciation support, and task challenge support. Reality confirmation support deals with recognizing that others perceive the world in a similar way. Task appreciation support means others acknowledge your efforts, while task challenge support deals with efforts to motivate one to accomplish more, or more efficiently.

Emotional support includes listening support, emotional support, and emotional challenge. Listening support was defined as perceptions that others are listening in a non-judgmental fashion. Emotional and emotional challenge support refer, respectively, to perceptions of care and comfort, and challenges to evaluate your own emotions.

Together, these processes are deeply intertwined with the practical components of team efficacy and cohesion. Shared perceptions of information and its interpretation (offered through informational assistance) can help to foster a more realistic sense of shared confidence. A team high in efficacy may in turn foster more supportive norms. Likewise, expectations that one can rely on his/her teammates in times of emotional and

tangible need may enhance perceptions of unity around the group's purpose. A cohesive group can also encourage these supports so as to strengthen shared pursuits.

By definition, social support requires exchanges between teammates. These interactions involve the expression of needs and offers of assistance, as well as the negotiation of how and why support will be offered. If many of the social dynamics studied within sport psychology rely on interpersonal relations, communication is at the heart of these interactions.

Communication Research in Sport Psychology.

In reviewing research on communication in sports teams, one is struck on the one hand by the many comments lauding what is considered to be effective communication, and on the other by the relatively few empirical studies which address the issue. Further, these research studies do little to bring forth a unified operationalization of team communication.

Communication is a central issue in sports teams, as with other groups. In discussing sports teams, various authors have mentioned that team discussions should be open, honest, and direct (Schellenberger, 1981; Sullivan, 1993; Yukelson, 1997). The practical impact of communication is evidenced in the suggested contributions it makes to such established group level processes as cohesion (Widmeyer, et al., 1985), social support (Rosenfeld & Richman, 1997), goal setting (Widmeyer & Ducharme, 1997), and collective efficacy (Bandura, 1997; Zaccaro, et al., 1995).

Widmeyer and his colleagues (1985) proposed that open discussion of roles and

expectations helps to facilitate a shared task-orientation. Subsequently, a cohesive group

should be more likely to self-disclose, and become more receptive, thereby increasing both

task and social cohesion (Carron & Denis, 1998). Verbal persuasion is appreciated as an

explicit contributor to efficacy, both individual and collective (Bandura, 1997). Dale and

Wrisberg (1996) used a performance profiling technique to describe how athletes

characterize a successful team and coach. Team attributes included being able to

communicate effectively, while the coach should be a good communicator. Overall,

interpersonal exchanges within sports teams are quite influential on player satisfaction,

team unity and individual and group performance. These effects may be what Dale and

Wrisberg had in mind by using the term "effective" communication. Exactly what makes

communication effective is unclear.

In line with Bales' (1950, 1965, 1970) conceptualization of intra-personal

communication, some studies on communication within sports teams have emphasized a

social versus task distinction. In 1966, Emerson analyzed the discussions of a mountain

climbing team. He specifically focused on transcripts of verbal interactions, and only on

task-oriented topics. These were further divided into positive or negative comments.

Carron (1981) discussed the theoretical implications of a sports team as a small group. His

discussion of communication also delineated all discussion into either task or social

communication. Sport psychology is largely an applied field, and performance is a bottom

line which motivates many researchers. It appears that an unfortunate (and improper)

deduction has been made that task outcome (i.e., successful performance) is solely related

to task communication.

Hanin (1992) chose to represent team communication in four dimensions: orientation, stimulation, evaluation, and task irrelevant. Orientation refers to those discussions by teammates regarding planning and coordinating activity (i.e., performance). Stimulation was defined as those messages aimed to motivate partners to maintain or increase activity level. Evaluation discussions were those that dealt with appraisals (either positive or negative) of the players' performance. Task irrelevant communication was defined as those "positive or negative messages having no direct bearing on the activity or task at hand" (p. 17). The conceptualization of all social communication as "task irrelevant" bluntly presents the author's value of such discussion. Hanin found that elite volleyball teams tend to display orienting communication prior to performance, stimulating communication during, and evaluating communication after performance. Overall, teams' communication patterns appeared to be predominantly stimulation based, with relatively equal amounts of orientation and evaluation. The amount of task-irrelevant communication was minor.

An even more restrictive view of communication was offered by Williams and Widmeyer in a series of studies with varsity golf teams (Widmeyer & Williams, 1991; Williams & Widmeyer, 1991). These authors defined intra-team communication as how often teammates gave each other tips about play during practices and tournaments. Despite this limited view, the authors still found communication to be effective in that it was a significant predictor of performance (Widmeyer & Williams, 1991) and cohesion

(Williams & Widmeyer, 1991).

Given the complete view of effective communication discussed above, several difficulties are apparent with these reports. Even though a task versus social discrimination has a strong historical founding, sport psychology seems to have relegated social communication to a meaningless role. The result is a skewed conceptualization of a central social process. Further, the research has focused on quantitative analyses of verbal communication. Body language, tone of voice, and interpersonal spacing are not deemed relevant. How things are said is ignored while who says it and how often it is said are emphasized.

The above studies have focused on the role of task-oriented interpersonal relations in sport performance. Other research has examined the efficacy of a more social and qualitative meaning of communication. Sullivan (1993) was motivated by the capabilities of interpersonal communication as a team building process. She described a communication primer for teams and coaches designed around four key values: genuineness; understanding; valuing; and acceptance. Genuineness refers to the group's tendency to communicate in open and honest ways. Understanding refers to the degree to which the communication is clear and meaningful. Valuing refers to communication which promotes individual worth, while acceptance is the expression of inclusion (or rejection) of individual members. Specific suggestions for coaches and athletes to improve communication included effective listening (e.g., using eye contact, reflective listening and trying not to argue, but understand), and to recognize and resolve conflict, build on

previous ideas and create feelings of trust, respect and understanding.

DiBerardinis, and colleagues (1983) instituted a training session for interpersonal relationships with a collegiate volleyball team. The authors found that improvements in communication skills were related to increased (individual) performance. Communication was operationalized through the Interpersonal Relationship Rating Scale (Hipple, 1970) which focuses on players' perceptions of the team as a whole. Items include the ability to listen to each other in an understanding way, tendency to trust one another, reactions to expressions of affection and warmth from one another, and reaction to conflict and antagonism. This instrument was also used by Sullivan (1995), who found that several qualitative aspects of team communication were related to cohesion.

While this scale provides an in-depth view of the social aspects of group communication, it was not specifically designed for athletes, and some items are not applicable to sports teams (e.g., our level of self-understanding, our degree of peace of mind). Further, the items do not discriminate between verbal and non-verbal layers of communication. One question asks the respondent to rate the team's level of giving love. This communication would typically involve verbal expressions, the amount and intent of physical contact and personal spacing while talking, as well as body language and facial expression. Given the complete conceptualization of interpersonal communication, the scale itself seems quite inadequate to describe communication within a sports team.

The study of communication has definite contributions to make to team dynamics in sports. These include the possibilities of enhancing team unity (Sullivan, 1993; Sullivan,

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1995; Widmeyer et al., 1985; Williams & Widmeyer, 1991), individual performance

(DiBerardinis et al., 1983) and group success (Dale & Wrisberg, 1995; Widmeyer &

Williams, 1991). Taken as a whole, this research suggests that there exists a construct of

effective communication which has probable consequences at the group and individual

level within sport. Despite these findings, the overall measurement of communication

within sports teams is quite narrow. Typically, only verbal task-oriented messages are

assessed. Social communication, non-verbal behaviors, and qualitative aspects of

discussions have been neglected and addressed inconsistently. Furthermore, the

operationalization of effective communication within sport psychology varies from study

to study, author to author, and is in dire need of a proven theoretical framework.

Theoretical Framework for Studying Effective Communication in Sports Teams.

Social exchange models may offer the most appropriate theoretical framework to

study communication within groups. As a school, these theories share certain concepts as

social exchange frameworks. First, people are assumed to be outcome interdependent;

people are involved in social relations in which one person provides outcome for another,

in turn receiving outcomes from that partner. Second, the actors in these relationships are

assumed to be motivated towards a profit. People act so that the rewards they receive

outweigh the costs of the relationship. Third, people are motivated to reciprocate within

these relationships. People will invest where they reap rewards. Fourth, these

relationships need not be symmetrical. An actor with an abundance of a desired resource

will find him/herself in a position of influence or power. Finally, while these theories tend

to view all relationships in economic terms, the resources exchanged are not limited to economic resources. Any resources people value may be exchanged (McGlintock & Keil, 1982). Intra-team discussions may contribute to any number of valued outcomes in sport (e.g., performance, player satisfaction, team unity, ...). Individual interactions may be seen as the exchange of valued resources because they contribute to desired outcomes.

If social exchange models agree that the exchange relationship is based on the transference of a resource, they offer different meanings for resource. Typical operational definitions have stressed the characteristics of rewards and punishments. Kelly and Thibaut (1978) define a reward as "pleasures, satisfactions and gratifications the person enjoys" (p. 12). Subsequently, an exchange relationship is determined by "the capacity to reward (or punish) another specified actor" (p. 347). The value of these rewards depends on their inherent nature and the laws of supply and demand. One hundred dollars will not be as valuable to a millionaire as to a college student.

However, a strictly economic view of social exchange rewards is inadequate. Compared to economic resources, social resources are subjective and ambiguous. Issues such as obligations and trust, which may dominate social exchange, are unspecified and have no determined value. Thus, while social exchange is an economic process of sorts, it is one in which participants do not prioritize equivalences in value, but attempt to achieve a state of reciprocity determined by social, individual and group values (Cole & Schaninger, 1999).

Foa and Foa (1974) stated, regarding their resource theory, that a resource is any

commodity, material or symbolic, that may be exchanged through interpersonal behavior. These commodities may include social rewards such as personal attraction, social acceptance, social approval, instrumental services, respect/prestige, and compliance/power (Blau, 1964), as well as loyalty, affection, contribution, and professional respect (Liden, et al., 1997). Clarifying that any interpersonal exchange which may be deemed valuable does little to specify what a resource is. Foa and Foa provide a relatively parsimonious conceptualization of resources involved in social exchange. They determine six types of resources: love, status, services, goods, information and money. These are not meant to be the only kinds of resources, merely six broad types commonly exchanged through interpersonal relations. Love is any expression of affection, warmth or regard. Status is the expression of judgment which includes a degree of prestige. Information may include any messages of advice, opinion, instruction or enlightenment (so long as these messages are not love or status). Money refers to any currency with an objective value. Goods are tangible products or materials. Finally, services are any assistance of bodily effort or possessions.

These six resources can be classified according to two dimensions: concrete-symbolic and particularistic-universal. The former dimension refers to how exchanges may range from being overtly tangible and concrete to being largely determined by social or cultural interpretation. The later dimension refers to the influence of interpersonal dynamics. Some resources may be powerfully influenced by who is providing them, others may be essentially the same regardless of the relationship. These two factors can represent

a two dimensional space in which the six resources may be placed. While it may be obvious that money is essentially a universal and concrete resource, and love mostly a symbolic and particularistic resource, it is important to remember that each resource is best understood as a range, not a discrete point, in this two dimensional space.

There are two key concepts in Foa and Foa's (1974) two dimensional representation of resources. First, exchanges rarely take place in pure form. Social behavior is extremely complex, and even the most simple of interactions (e.g., a handshake) may actually contain two or more resources (e.g., love and status). Second, resources tend to be exchanged with similar resources. However, because each resource is actually a range, and these ranges may overlap, neighboring resources are exchanged more often than non-neighboring ones.

With respect to the study of productive player-player communication in sports teams (specifically at non-professional levels), money, goods and services are not applicable. Love, status and information are three resources which can be exchanged through interpersonal discussions. If we examine some of the dimensions of communication already established in sports teams, they do fit these types of resources. Aspects such as supportiveness, openness and level of giving love (DiBerardinis et al., 1983; Sullivan, 1995) fit within Foa and Foa's (1974) concept of love. Information includes such factors as tips on play (as measured by Williams & Widmeyer (1991); and Hanin's (1992) orienting, stimulating and evaluating). Finally, Sullivan's (1993) notions of valuing, genuineness, understanding and acceptance all convey status (as well as love).

Again, the three dimensions of money, services and goods (as defined by Foa and Foa)

appear thus far to be inapplicable to communication in sports teams.

Not only is Foa and Foa's (1974) resource theory inclusive of intra-team

communication as studied in sport psychology, its theoretical implications (e.g., that

similar resources are more likely to be exchanged) offer a sound basis for deductive

research. This model is proposed in the present study as the most applicable for the study

of communication within sports teams.

Summary and Discussion

Despite the importance of communication as a social process and the noted need

to study the process in sports, sport psychology suffers from the lack of a coherent and

organized framework for studying communication. Research on the topic has been done

in a piece-meal fashion. It is proposed that a theoretically based instrument would offer a

valid and reliable method of determining the state of intra-team communication. This is

the purpose of this study. The social exchange theory of Foa and Foa (1974) serves as a

sound theoretical framework, and a detailed review of studies of communication within

sports teams will help to create a multi-dimensional, sports-specific measurement of

effective communication.

CHAPTER 3

STUDIES ONE AND TWO

Study One

Participants One hundred and fifty seven athletes (80 female, 76 male) participated in this stage of data collection. All participants were solicited through their university or recreational league. These athletes represented the following sports at both the varsity and recreational levels: football ($\underline{n}$ = 19), hockey ($\underline{n}$ = 81), rugby ($\underline{n}$ = 8), basketball ($\underline{n}$ = 11), track ($\underline{n}$ = 22), volleyball ($\underline{n}$ = 10), and curling ($\underline{n}$ = 6). They ranged in age from 17 to 39 years ($\underline{M}$ = 23.3, $\underline{SD}$ = 4.64) , with an average of 23.3 years. They averaged 8.14 ($\underline{SD}$ = 3.81) years with their current team, ranging from 1 to 17 years experience.

Procedure Approval to conduct this study as well as Studies 2 and 3 was granted by the Institutional Review board (see Appendix A). After completing informed consent forms (see Appendix B), participants completed a one page open-ended questionnaire. The instructions asked them to "think for a minute about how members of a sports team communicate with each other and list everything about that communication which you think is important". See Appendix C for a copy of the survey. All questionnaires were distributed after team events (e.g., games, practices). All participants completed them quietly in the presence of the primary author.

Results These 157 participants produced a total list of 573 examples of important intra-team communication. Some items were listed more than once; see Appendix D for a

complete copy of these items. A panel of experts searched these items for common themes. Respondents were segregated by gender, and, because there were no apparent differences between genders with respect to these themes, then pooled together. All subsequent results and discussion of this phase of research are based on a pan-gender analysis of this data.

The responses of both genders could be parsimoniously represented in the following six issues. Actual quotes are listed in parentheses in support of each factor. In determining a title for each factor, consideration was given to the entire variety of the itesm given as examples, not just those most commonly mentioned. First, communication should be clear (e.g., "direct", "specific", "clear", "reliable", "coherent"...). Second, communication should be instructive (e.g., "educational", "creative", "help", "motivational", "discipline", "feedback"...). Third, teams should communicate in ways that are supportive (e.g., "sympathetic", "honest", "open", "sensitive", "inclusive" ...). Fourth, teams should communicate in ways that handle conflict (e.g., "resolve problem calmly", "openly discuss solutions", "explore options", "no arguing on court" ...). Fifth, teams should communicate in ways that foster togetherness (e.g., "fun", "slang", "nicknames", "togetherness", "team unity", "shared goals"...). Finally, teams should communicate with appropriate physical presentation (e.g., "body language", "eye contact", "tone of voice", "vocabulary" ...).

The present concepts of communication can all be seen as resources according to Foa and Foa's (1974) theory. Because support and conflict resolution both deal with the

exchange of emotions and warmth within the team, they are both aspects of the class of love resources. Togetherness as a factor includes these types of messages as well as those of status (i.e., of belonging to the group). Since the resources of love and status are adjacent concepts, and because each is really a wide range of behaviors, togetherness can be seen as a resource on the border between them. Finally, instruction, clarity and physicality all are ways of imparting important knowledge and/or expectations to teammates. Thus they all fit within the class of resources termed information. To further clarify these six factors, and the boundaries and relationships between them, a focus group was conducted.

Study Two

Participants Seven athletes (4 male, 3 female), participated in a focus group on effective communication within sports teams. Participants ranged in age from 19 to 24 years with an average age of 22.3 years. Sports played included track, golf, hockey, rugby, football, and cross country. This variety of sports and gender mix was deemed appropriate because the results of the first study were based on several sports and a pan-gender data analysis.

Procedure The main researcher served as moderator for this focus group. Because the purpose was to clarify the styles of communication which emerged from the first phase of research, the interview guide focussed on the six factors. The focus group was preceded by informal introductions and a brief social discussion, including refreshments. This was designed to reduce individuals' hesitancy to contribute to the subsequent group

discussion about the research question.

Upon beginning the focus group, all participants gave consent to participate. The interview guide was structured so that each factor (e.g., instruction, conflict resolution, support, clarity, physicality, and togetherness) would be discussed in turn. For each factor, main research questions, leading questions and testing questions were scheduled. Main research questions were designed to introduce the main issue of consideration to the group. Leading questions were designed to probe the topic at a deeper level. Testing questions were designed to test the limits of a concept or area (Krueger, 1994). Scheduled questions were fairly minimal (e.g., about two questions per type per factor). This was purposely designed to impinge as little as possible upon the participants' perceptions of these aspects of team communication. See Appendix E for a copy of the interview guide.

Results This phase of research resulted in further clarification of the resources exchanged in team communication. Firstly, the concept of instruction was divided into two components: motivation and instruction. Examples of instruction developed from Study 1 included issues of both exchanging information (e.g., formulating a gameplan), and exchanging arousal (e.g., shouting to get each other up). There was a consensus opinion in the focus group that these were two different resources of effective communication. This point was stated nicely by a 21 year old male football player who said "well, it's not exactly the same to tell somebody how to do something as to get him psyched up to do it". Other comments to support instruction and motivation as separate

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entities included the notion that not everything is a matter of instructing or teaching. "Sometimes you can psych someone up who doesn't know how to do it, and they'll get it done," ... sometimes someone who can perform, "doesn't feel up to it". Then it is not a case of instructing, per se, but orienting and motivating.

These perceptions were congruent with the current measurement in sports psychology. Hanin (1992) differentiated between stimulation (i.e., motivation) and orientation and evaluation (both of which are types of instruction). Widmeyer and Willams' (1991) definition stresses the instructive communication of team communication while ignoring motivation, suggesting the two are separate resources.

Secondly, some of the aspects which emerged from Study 1 seemed to depend on the topic of communication. Specifically, the degree of clarity and physical presentation all seemed to "depend on" what exactly was being communicated. As a 24 year old female rugby player noted "sometimes it's appropriate to shout, and sometimes it isn't". The athletes agreed that clarity of communication served a function, particularly when one tries to instruct, but in some cases (e.g., joking between teammates, or when opponents might 'steal' information), it is valuable to be unclear.

In the lexicon of the theoretical framework being used here, neither clarity nor physicality is a resource that is exchanged. Rather they are aspects of the exchange. The resources appear to be instruction, motivation, support, togetherness, and conflict resolution. Physicality and clarity are two aspects of the exchange, but not commodities which are valued and exchanged in themselves.

The remaining three factors (e.g., Conflict Resolution, Support, and Togetherness) were all supported by the focus group as appropriate resources of intra-team communication. Comments used to describe the factor of togetherness (e.g, jokes, socializing together as a team, acting like a family) and support (e.g., listen, be sympathetic, accept one another) were very similar to those seen in Phase 1. Likewise, these participants had a similar view of Conflict Resolution as did the athletes in Phase 1. It was noted that it is an important part of team functioning to handle conflicts, and if possible avoid them (e.g., "you don't want to let personal fights spill over onto the floor"). Like the previous phase, athletes mentioned both positive (e.g., calm down, talk about it at appropriate times) and negative ways (e.g., shout, scream, "have it out" with him/her) to deal with conflict.

General Discussion for Studies One and Two

Based on these two phases of research, there are five main resources which appear to be exchanged through effective communication within sports teams. They are motivation, instruction, support, conflict management, and togetherness. Motivation is currently defined as the exchange of messages aimed at arousing, encouraging or focussing teammates. Instruction refers to any communicated effort to transfer procedural or declarative knowledge. Support is communication that validates and empathizes teammates. Conflict management refers to attempts to pro-actively or constructively handle intra-team disagreements. Finally, togetherness refers to those communications which are aimed at enhancing team unity and individual belongingness. Each of these

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factors is a resource which can be exchanged between group members, the essence of Foa and Foa's (1974) definition of resource. Teammates can give or receive messages of team togetherness, instruction on strategy and ability, and attempts to arouse (or calm) each other.

The aspects of physicality and clarity as sub-components of a variety of messages is coherent with the methodology of communication studies. Physicality includes proxemics, non-verbal behaviour and kinesics, which have already been noted to be important components of communication, regardless of topics. Likewise, clarity is distinct from the topic of conversation. Further, either of these are resources; one does not communicate clarity, he communicates a resource (e.g., instruction) clearly. While both of these issues will still be addressed in a complete conceptualization of intra-team communication, they will be included within each resource, and not included as resources on their own.

The present concepts may all be sub-components of the six main types of resources outlined in Foa and Foa's (1974) resource theory. The resources clarified by these authors were intended to be broad classes of exchanges. Each of the resources (for example, service) was broadly defined purposely so that the many exchanges which could be considered service would all be included. The five resources presented here all fit into the more particularistic and intangible types of resources. Specifically, support and conflict management may all be considered exchanges of love, while togetherness transmits both love and status (of being a team member). Motivation and information can

be seen as part of their concept of information.

The Foas (1974) defined love as any expression of affection, warmth or regard. As presently defined, togetherness and social support both serve to enhance one's feelings of self-respect and worth. Thus, both are ways of expressing "affection, warmth or regard". Inasmuch as conflict resolution involves the exchange of resources to minimize threats to inclusion and acceptance, it may also be considered a type of love exchange. Similarly, motivation and instruction are both types of information (i.e., any messages of advice, opinion, instruction or enlightenment).

As well as fitting into the chosen theoretical framework, the resources identified here are also consistent with previously noted factors of intra-team communication. Previous literature on communication in sports teams has noted the importance of social support (e.g., Rosenfeld & Richman, 1996; Sullivan, 1993); information sharing (e.g., Widmeyer & Williams, 1991; Williams & Widmeyer, 1991); and motivation (Dale & Wrisberg, 1996; Hanin, 1988). Conflict management was noted as an important component of team communication by both DiBerardinis et al. (1983) and Sullivan (1995). Finally, the value of what is presently defined as togetherness can be seen in the wealth of literature on cohesion in sports teams (see Carron & Hausenblas, 1998).

These two phases of research were designed to fulfill Poole and McPhee's (1985) second step in designing communication scales: generation of a preliminary sample of items. After these studies, a five factor model of effective team communication is apparent. Further, the researcher has a rich pool of sample items (e.g., examples from

Study 1, comments from the focus group, and items from previous literature). The third

and final study of this dissertation focused on the design, and empirical and psychometric

evaluation of a scale for effective team communication in sports.

CHAPTER 4

STUDY 3

Based on these resources, a survey was designed to measure the frequency of effective communication for sports teams. Each of these resources was presented through 10 items that could be responded to on a range of how often they occurred within the team. This was the basis of the third study in this line of research. With respect to a measure of effective communication, the following hypothesis was made.

1. A five factor (e.g., instruction, motivation, conflict management, support, and togetherness) model of effective team communication will emerge from a confirmatory factor analysis. These factors may be (and will statistically be allowed to be) inter-correlated.

In attempting to clarify the construct validity of effective communication, the relationships between communication and cohesion were also studied. Cohesion was chosen as a verifying construct because it is presently the only well operationalized group level construct within sport. The Group Environment Questionnaire (Widmeyer et al., 1985) is the most widely used and valid measurement of cohesion in sport psychology (Cota, Evans, Dion, Kilik & Longman, 1995). Widmeyer et al. (1985) represented cohesion as a four factor construct. These factors are differentiated along two dimensions - social versus task cohesion; and the individual's attraction to the group versus perceptions of group integration. The resulting four factors are group integration - task

(GI-T), group integration - social (GI-S); individual attraction to group – task (IATG-T), and individual attraction to group - social (IATG-S). GI-T refers to individual member's perceptions of the group's closeness around task-oriented issues (e.g., our team is united in trying to reach its goal for performance), while GI-S refers to those perceptions about the group as a social unit (e.g., our team would like to spend more time together in the off-season). IATG-T pertains to personal involvement with the group task (e.g., this team does not give me enough opportunities to improve my personal performance) while IATG-S is concerned with personal involvement and acceptance by and social interaction with the team (e.g., I enjoy other parties more than team parties).

With respect to effective communication and cohesion, the following hypotheses were put forth:

2. Instruction and motivation, because they are both exchanges of information, will be positively correlated to both task cohesions. Previous research has found that task-based communication is related to task cohesion, supposedly through increasing pressure to group norms (Williams & Widmeyer, 1991)

3. Conflict resolution will be negatively correlated with all aspects of cohesion. Sullivan and Feltz (2000) found a negative relationship between use of conflict strategies (regarding intra-team conflict) and cohesion, and Brawley, Carron and Widmeyer (1988) stated that teams more resistant to conflict were more cohesive.

4. Togetherness and social support will be positively correlated with both social cohesions. These resources appear to be very similar to such issues as social support, self-

disclosure, and expressions of love and acceptance, all of which have been associated with social cohesion (e.g., DiBerardinis et al., 1983; Richman & Rosenfeld, 1996; Stokes et al., 1983; Widmeyer et al., 1985).

Method

Participants. Five hundred and seventeen athletes (283 male, 232 female) participated in this stage of data collection. Participants were recruited through their university or recreational league. These individuals ranged in age from 18 to 42 (M = 21.6, SD = 2.82). They represented varsity (n = 268) and recreational (n = 245) sports. The average number of seasons played with their current team was 2.17 years (SD = 1.63), and this experience ranged from 1 to 12 years. Again a wide variety of sports were sampled, including basketball (n = 57), wrestling (n = 7), soccer (n = 67), curling (n = 31), volleyball (n = 102), hockey (n = 87), cross country (n = 5), rugby (n = 34), track and field (n = 83), swimming (n = 6), football (n = 34), gymnastics (n = 2) and softball (n = 1).

Materials. The previous two stages of research resulted in a hypothetical five factor model of effective communication (i.e., conflict management, togetherness, support, instruction, and motivation). A 50-item questionnaire to measure the frequency of these exchanges within the team was constructed. Each factor was represented by 10 items. Items were chosen from the examples generated in Study 1 as well as comments from Study 2. The exact choice of an item for inclusion in the scale was based on a three criteria. First, items mentioned frequently in Phase 1 (e.g., use jokes, are sympathetic, discuss calmly) were included, as were examples which were stressed by participants in the

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focus group (e.g., communicating directly with those one has a problem with). Second, scale construction attempted to reflect the entire notion of the resources, not just stereotypical examples. For example, while "listening" was mentioned several times as an example of support and "sharing of thoughts" only mentioned once, both were included so as to present a complete description of concept. Third, in keeping with the present desire to stress the multi-dimensionality of communication, efforts were made to include both social and task related items for each of the factors, as well as non-verbal (e.g., proxemics, paralanguage, and kinesics) and verbal items. Answers could range from 1 (hardly ever) to 7 (almost always). See Appendix F for a copy of the original scale.

Written instructions stated that these questions referred only to interactions between the players on the team, but were not limited solely to games or competitions. Practices and social occasions should also be considered. Each of the factors questioned was included on a separate page. For each of the five factors, the instructions defined what resource of communication was being considered. Participants were asked to respond on a 7-point Likert scale how frequently the team displayed each of these examples when communicating that particular resource.

All participants also completed the Group Environment Questionnaire (GEQ) (Widmeyer et al., 1985). The GEQ included 18 questions referring to the athletes' perceptions of the team as a whole as well as their own involvement with the group. All questions are answered a 9-point Likert scale. The survey measures four different factors of cohesion: Group Integration - Task, Group Integration - Social, Attraction to Group -

Task, and Attraction to Group - Social. In all cases, higher scores indicate perceptions of higher cohesiveness. Internal consistencies for this measure have ranged from .65 to .93 (Brawley, Carron, Widmeyer & Spink, 1994). See Appendix G for a copy of this survey.

All athletes completed informed consent forms before completing the surveys. The two questionnaires were counterbalanced. All participants completed these questionnaires in a quiet setting. Most respondents took less than 15 min. to complete both instruments.

Results

Table 1 gives the means, standard deviations, skewness and kurtosis of all 50 communication items as well as the GEQ factors. Any missing data were replaced with the mean of nearby points. All variables appear to be normally distributed, except for the second togetherness variable ("we joke with each other"), and the third motivation item ("we use physical gestures such as high fives and pats on the back to congratulate"). The statistical program currently used (EQS), adjusts variables that are non-normally distributed, so this was not a concern for analysis.

Confirmatory factor analyses. The communication scale was subjected to a confirmatory factor analysis. EQS tests and adjusts for multivariate normality, another assumption of a CFA, so this did not have to be evaluated through bivariate scatterplots. The hypothesized factor structure was a five factor model, with no cross loadings of variables, and expected intercorrelations between factors. Each communication variable was forced to load onto its supposed factor. The factors were obliquely rotated and the method of extraction was Maximum Likelihood.

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Table 1: Descriptive Statistics of Variables

Variable	Item	Mean	SD	Kurtosis	Skewness
Conflict	1	4.67	1.39	-0.37	-0.41
	2	4.63	1.42	-0.52	-0.39
	3	4.43	1.77	-0.84	-0.38
	4	4.67	1.59	-0.40	-0.57
	5	4.15	1.43	-0.35	-0.05
	6	4.27	1.52	-.37	-0.52
	7	4.19	1.51	-0.65	-0.15
	8	4.44	1.44	-0.44	-0.21
	9	3.04	1.71	-0.51	0.62
	10	4.91	1.65	-0.60	-0.53
Instruction	1	5.57	1.19	1.18	-1.01
	2	3.87	1.52	-0.67	-0.04
	3	5.06	1.36	0.03	-0.65
	4	5.22	1.16	0.26	-0.59
	5	4.99	1.60	-0.41	-0.60
	6	5.12	1.35	0.14	-0.73
	7	4.50	1.31	-0.08	-0.34
	8	4.83	1.38	-0.13	-0.49
	9	3.88	1.61	-0.81	0.00

Variable	Item	Mean	SD	Kurtosis	Skewness
	10	4.99	1.40	0.12	-0.70
Motivation	1	5.00	1.47	-0.07	-0.72
	2	5.85	1.23	1.04	-1.14
	3	6.12	1.09	2.06	-1.42
	4	4.90	1.45	-0.12	-0.54
	5	4.78	1.54	-0.24	-0.49
	6	5.82	1.19	0.99	-1.11
	7	4.31	1.60	-0.64	-0.19
	8	3.95	1.45	-0.46	-0.22
	9	4.15	1.38	-0.38	-0.21
	10	4.70	1.62	-0.64	-0.40
Support	1	4.98	1.29	-0.03	-0.51
	2	4.79	1.42	-0.06	-0.60
	3	5.36	1.39	0.73	-0.96
	4	5.01	1.34	-0.03	-0.53
	5	4.96	1.37	0.23	-0.70
	6	5.14	1.32	0.04	-0.66
	7	4.70	1.44	-0.39	-0.41
	8	5.44	1.38	0.15	-084

Variable	Item	Mean	SD	Kurtosis	Skewness
	9	4.97	1.37	-0.16	-0.50
	10	5.07	1.38	0.08	-0.69
Togetherness	1	5.70	1.52	1.09	-1.29
	2	6.34	0.99	5.44	-2.08
	3	5.18	1.47	0.22	-0.78
	4	5.20	1.66	0.04	-0.89
	5	4.81	1.73	-0.63	-0.54
	6	4.85	1.31	-0.39	-0.33
	7	5.36	1.45	-0.07	-0.77
	8	5.15	1.30	0.33	-0.70
	9	5.45	1.25	0.21	-0.69
	10	5.57	1.33	-0.97	-0.37
ATG - S		31.95	7.83	-0.23	-0.37
ATG - T		26.82	7.31	-037	-0.59
GI - S		24.38	6.35	0.03	-0.35
GI - T		29.45	7.09	-0.56	0.07

The five predicted communication factors were analyzed for factor reliability. Four of the five showed Cronbach's alphas over .70, indicative a reliable factor (Nunnaly, 1973). Conflict Resolution was the one factor with questionable reliability ($\alpha = 0.58$). The alphas for Instruction, Motivation, Support and Togetherness were 0.78, 0.75, 0.86, and 0.82, respectively.

The goodness of fit between this model and the data were quite poor. The Chi square for the model was large, χ^2 (1225, N = 517) = 11382.714. But, because Chi square is typically large for this procedure, it is suggested to divide it by the degrees of freedom (Tabachnick & Fidell, 1996). A ratio of 3 is acceptable, 2 indicates an excellent goodness of fit (Stevens, 1996). The current ratio was 9.29. Other indexes were equally disappointing; Lisrel Goodness of Fit Index (GFI) = .66, Adjusted GFI = .63, and Root Mean Square Residual (RMSR) = .21. The Root Mean Square Error of Approximation (RMSEA = .079) was the only index which could even be considered acceptable.

An examination of the factor loadings and largest standardized residuals suggested the factor of Conflict Resolution was quite poor and this may have influenced the global indices of fit. A reduced model, four factor CFA with the complete sample was then attempted. While the goodness of fit of this model was improved, the indices barely approached levels which could be considered adequate. Chi square (465, N = 517) = 6852.16, χ^2 /df = 14.74, GFI = .80, AGFI = .77, RMR =.016 , RMSEA = .08.

Because many of the individual responses were nested within teams, it was possible that the variation in data may have been reduced. One way to alleviate this

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concern was to randomly select half the total sample, thus reducing team dependency of responses. A replication of the CFA with this random sample did not result in a better model, Chi square (1165, N = 266) = 3223.44, χ^2/df = 2.77, GFI = .65, AGFI = .61, RMR = ..21, RMSEA = .049.

Exploratory factor analysis. The division into two random sub-samples was maintained for all subsequent analyses. These samples contained 251 and 266 subjects. Table 2 gives the demographic information for these samples. There were no apparent differences between the two samples. The procedure now involved using one of these samples to perform an exploratory factor analysis (EFA), and, because EFA may err in presenting models which overfit the data, the second sample would be used in a CFA to confirm any emergent model. Because the hypothesized factor structure assumed inter-correlations between factors, the initial EFA was based on oblique rotation. However, an oblimin rotation through SPSS with Generalized Least Squares method of extraction failed to converge after 25 iterations for either of the 2 samples, so an orthogonal structure was then explored.

Table 2: Demographic statistics for both samples.

N	Age M(SD)	Seasons with team M(SD)	Percentage Male	Percentage Varsity	Percentage Interacting Sport
251	21.50 (2.64)	2.05 (1.49)	53.8	51.0	82.9
266	21.76 (2.99)	2.27 (1.75)	56.1	52.8	77.1

The EFA used a Generalized Least Squares method of extraction and a varimax

oblique rotation between factors. It was run through SPSS. Thirteen factors with eigen-values greater than one emerged through this procedure. The scree plot is given in Figure 2. Only three factors had at least three variables with factor loadings of greater than .40, a criteria for interpretation according to Tabachnick and Fidell (1996). Appendix H gives the factor loadings for all variables on all 13 factors, after factor rotation. These remaining three variables had eigen-values of 23.22, 9.13, and 5.34, respectively. They accounted for a combined 37.70% of the variation in the data.

Figure 2: Scree plot of Exploratory Factor Analysis ($\underline{n}$ = 251).
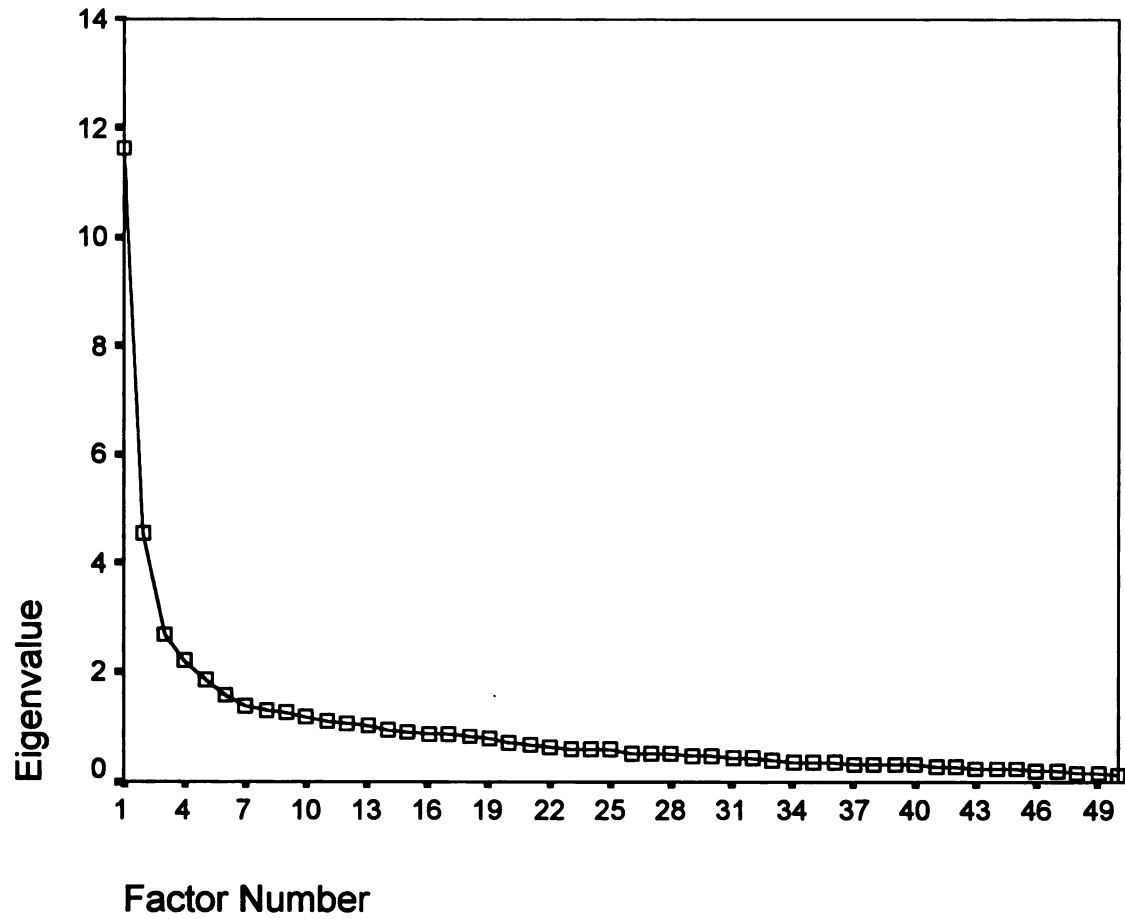
This model had a much better goodness of fit than either of the CFA's, χ^2 (653, $\underline{N}$ = 251) = 1688.36. The ratio of χ^2 to degrees of freedom was 1.05 A ratio of less than 3.0 for a factor analysis is acceptable, while anything under 2.0 is considered indicative of an excellent fit between the model and data. Other indicators of goodness of fit are not available through SPSS, but would be seen through the CFA by EQS.

The first factor contained five togetherness items: "we use nicknames'" "we joke with each other'" "we use physical contact to include each other in conversations'" "we use slang that only people on the team would understand", and "we use gestures that only people on the team would understand". This factor reflected a sub-component of the hypothesized togetherness factor, and was termed Close communication. The second factor contained five conflict items: "we clearly express when we are upset", "we shout when upset", "we communicate messages through other people when upset", "we communicate anger through body language", and "get 'in each other's faces' when we disagree". This factor was termed Angry communication. The final factor contained another three items from the original togetherness scale: "we try to make sure all players are included", "we make these comments at appropriate times", and "we make it clear that we are joking". This factor was termed Considerate communication. More detailed interpretations of these factors are included in the next chapter. Table 3 gives the factor loadings for each of these variables with their corresponding factors.

Table 3: Factors and factor loadings.

Variable	Close Communication	Angry Communication	Considerate Communication
Togetherness 1	0.66		
Togetherness 2	0.47		
Togetherness 3	0.50		
Togetherness 4	0.86		
Togetherness 5	0.88		
Conflict Resolution 1		0.42	
Conflict Resolution 3		0.83	
Conflict Resolution 4		0.74	
Conflict Resolution 6		0.41	
Conflict Resolution 9		0.66	
Togetherness 7			0.69
Togetherness 8			0.69
Togetherness 10			0.52

The reliability of these factors were then analysed through Cronbach's alphas. The alphas were .83 for Close communication, .74 for Angry communication and .76 for Considerate communication. These are all acceptable, surpassing the .70 criterion

proposed by Nunally (1970)

Table 4 gives the descriptive statistics for these factors (factor scores were
calculated by averaging the composite items). All scores are moderate (e.g., 4.0 - 5.5 out
of 7), and normally distributed.

Table 4: Descriptive statistics for EFA factors ($\underline{n}$ = 251)

Factor	Items	Mean	Standard Deviation	Skewness	Kurtosis
Close	5	5.45	1.13	-0.62	-0.09
Angry	5	4.06	1.44	-0.21	-0.59
Considerate	3	5.38	1.09	-0.55	0.00

Confirmation of the emergent model. The second sample ($\underline{n}$ = 266) was then
subjected to a Confirmatory Factor Analysis to confirm this emergent model. These
procedures were run through EQS. The factor loadings which emerged through the EFA
were forced upon the relationships between variables and factors. Only those 13 variables
from the EFA were included. The factors were allowed to intercorrelate. The Residual
Correlation Matrices for this sample is given in Appendix I.

The EFA model did not show a good match to the data in this sample, χ^2 (62, $\underline{N}$ =
266) = 354.68, χ^2 /df = 5.71, GFI = 0.82, AGFI = 0.74, RMR =0.26, RMSEA = 0.13.
Based on the effect it would have on the Chi square for the entire model, freeing Variable
42 ("we joke with each other") so that it may load on Considerate communication instead
of Close communication seemed appropriate. This alteration was made to the model,

resulting in the following goodness of fit: $\chi^2(62, \underline{N} = 266) = 275.57$, $\chi^2/df = 4.44$, GFI = 0.85, AGFI = 0.79, RMR =0.23, RMSEA = 0.11. The GFI indices for this model indicate an adequate, but far from exact fit of the data to the model. Equivalent and lesser values have been reported in scale development within sport psychology (e.g., McAuley, Duncan & Tammen, 1989; Vealey, Hayashi, Garner-Homan & Giacobbi, 1998).

This adjusted three factor model was tested for the reliability of its factors. Close communication had a Cronbach's alpha of .82, while Angry communication and Considerate communication produced alphas of .59 and .77, respectively. Of these, Anger appears to be unreliable within this sample. The descriptive statistics for these factors is given in Table 5. These are quite similar to those for the EFA sample, as seen in Table 3.

<u>Table 5</u>: Descriptive statistics for CFA factors ($\underline{n} = 266$)

Factor	Items	Mean	Standard Deviation	Skewness	Kurtosis
Closeness	4	5.22	1.30	-0.66	-0.17
Anger	5	4.05	1.32	-0.11	-0.32
Consideration	4	5.60	1.00	-0.94	1.02

<u>Relations with cohesion</u>. A final step in model verification was the relationship of these factors to the established construct of team cohesion. Table 6 gives the correlation matrix for these seven factors for both analyses. Across both samples, Considerate communication and Close communication were consistently related with all four cohesion factors at significant levels, typically $\underline{p} < .001$. Angry communication was negatively

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related to both task cohesions at $p < .001$ in the EFA sample, and negatively correlated

with ATG-T in the CFA sample.

Within the three factors of effective communication, Considerate and Close

communication were highly correlated (at $p < .001$). Angry communication is positively

related to Close communication, but negatively related to Considerate communication.

Table 6: Correlation matrix of communication and cohesion factors.

	Cons.	Close.	Ang.	ATG-S	ATG-T	GI-S	GI-T
Considerate	1.0	0.32**	-0.12	0.20**	0.25**	0.27**	0.42**
Closen	0.45**	1.0	0.26**	0.40**	0.16*	0.24**	0.24**
Angry	-0.19**	0.15*	1.0	-0.06	-0.18**	-0.02	-0.16**
ATG-S	0.28**	0.28**	0.06	1.0	0.45**	0.48**	0.42**
ATG-T	0.37**	0.18*	-0.16**	0.38**	1.0	0.36**	0.55**
GI-S	0.23**	0.33**	-0.11	0.50**	0.31**	1.0	0.50**
GI-T	0.48**	0.33**	-0.08	0.41**	0.50**	0.45**	1.0

* $p < .05$ ** $p < .001$

Note: The values above the diagonal are those for the EFA sample ($n = 251$), those below

the diagonal are for the CFA sample ($n = 266$).

Post hoc analyses. Due to the heterogeneity within the overall sample, some post

hoc analyses were possible to further clarify the characteristics of effective

communication. Comparisons were made along the following factors: gender, level of

sport participation (e.g., varsity versus recreational), and interaction of the sport (e.g., co-

acting versus interacting). Null hypotheses of no differences between these groups were put forth. Separate MANOVA procedures were run through SPSS for both samples. Close, Angry, and Considerate communication were entered as dependent variables, and gender, level of sport and activity (co-acting or interacting) were entered as factors. All main effects and higher order interactions were tested. Within the EFA sample, there was a significant main effect for gender, F (3, 242) = 5.11, p < .01. This was due to the between subject effect of gender on Angry communication, F (1, 244) = 10.01, p < .01. A One Way Analysis of Variance was then conducted on gender by factor one. It showed that males (4.54) had a significantly higher mean score for Anger than females (3.93), t (1, 249) = 4.52, p < .001. Within the CFA sample, males had a higher mean (4.33) for communication of Anger than females (3.72). While this difference did approach significance at p = .05 (t (1, 262) = 3.91), the effect was not significant.

A possible mediator between the dependent and independent variables in these MANOVA's was the years experience a player had with his/her present team. Thus a MANCOVA, controlling for this variable may be appropriate. One assumption of MANCOVA is that a significant linear relationship between the covariant and the dependent variables exists. This was not the case with the present data. Season with current team was only significantly associated with one dependent variable, Angry communication, and only in one of the samples, r = 0.133, p<.05. Thus a MANCOVA was not executed.

CHAPTER 5

DISCUSSION

The present research presented the initial findings in the construction of a scale of

effective team communication within sports. It was hypothesized that a five factor model

of communication, encompassing five different interpersonal resources would emerge

from the data. This did not happen. Further hypotheses of correlations between these five

factors and cohesion were then not entertained. However, an EFA, and subsequent CFA

did reveal a three factor model. These factors were further supported through significant

correlations to team cohesion. There was also a gender difference within one of these

factors, with males exchanging anger more than females (within one of these samples).

Structural Validity of the Model

Confirmatory Factor Analysis. The hypothesized five factor model of effective

communication did not emerge from the present data. This was particularly disappointing

because two stages of research suggested this structure.

One reason for this failure may have been the decision to base the communication

scale on frequency as opposed to importance. The first phase of the present research

focused on the importance of issues within team communication. Respondents were asked

to list everything they felt was important about team communication. This choice of

words was designed to make participants think of communication which was effective in

some sense. However, the final scale administered to the participants asked them to rate

each item in terms of how frequently the team interacted in this way (e.g., from hardly ever to almost always). This was chosen because frequency may be a better indicator of actual team dynamics than ratings of importance. Players may agree that it is very important that intra-team conflicts be dealt with before competition. However, the team may actually accomplish this only rarely. In this case, a measure of how frequently they keep conflicts away from competition is much more valid than how important it is to follow this practice. Also, other measures of team social issues typically base measurement on frequency, in particular the Group Environment Questionnaire. Because this scale was being used to assess construct validity in this case, it was deemed important to maintain an equivalence between the two instruments.

This incongruence between phases within this process of scale development may have contributed to the failed CFA. To a certain extent, items and factors were based on perceived importance, but were tested on perceived frequency. While the focus group was designed to ease the transition from item generation to scale construction, it may not have been as effective as was hoped.

Despite this possible incongruence between different phases of research, two of the hypothesized factors (Togetherness and Conflict Resolution) eventually emerged in some form. Particularly surprising was the absence of any task communication (i.e., Instruction and Motivation) from these results. One factor which may explain the lack of emphasis on task communication could be the relative frequency of these exchanges between teammates. The directions for the final questionnaire asked the athletes to think of all

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cases in which the team interacted. This could be competitions, practices, or social events. Given this broad scope of interactions, social issues such as togetherness and conflict resolution may represent a much larger proportion of team communication than task issues such as instruction or motivation. Even though the questionnaire focused on the relative frequency of these exchanges (i.e., respondents were asked to think only about exchanges of instruction for questions of instruction), these communications may have been such a small aspect of overall team dynamics. If this misinterpretation distorted the responses of a minority of the athletes who completed this questionnaire, it may have had drastic effects on the shared variability of responses upon which a factor analysis is based, potentially resulting in a failed CFA. Upon examination, the standard deviations do not appear to support this explanation, but it remains a possibility.

Factor interpretation. Each of these present factors were reductions of the predicted factor structure. One for the predicted factor of conflict, the other two for togetherness. However, they are not the hypothesized factors. Examination of the factor loadings illuminates the true nature of these two factors.

The first factor contained five items, later reduce to four. All of these items were from the hypothesized factor of togetherness. The final four items were "we use nicknames", "we use physical contact to include each other in conversations", "we use slang that only people on the team would understand", and "we use gestures that only people on the team would understand". These items are a sub-component of the previously defined factor of togetherness. More specific to these verbal and non-verbal

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messages is the sense of inclusiveness and distinctiveness. This factor is termed Close communication and is defined as those verbal and non-verbal messages which serve to exchange a sense of shared inclusion.

The second variable contained five conflict items: "we communicate clearly when we are upset", "we shout when upset", "we communicate anger through body language", "we communicate messages through other players when upset", and " we 'get in each other's faces' when we disagree". While the original conflict factor was defined as efforts to avoid disagreements, or to constructively deal with them if they arise, this factor only dealt with how people communicated their emotions once conflicts had emerged. This factor does not reflect any pro-active style of expressing disagreements constuctively, but instead centers on largely overt, emotional expression of disagreement, irritation, or stronger emotions. Therefore, this factor was titled Angry communication. It was defined as those verbal and non-verbal messages that exchange feelings of disagreement, displeasure, or anger. Interestingly, the items included here largely are indicative of what would appear to be destructive ways of dealing with intra-team conflict (e.g., shouting, getting in one another's faces, indirect communication).

The final factor originally contained three items, and, after the CFA procedures, was altered to include one more. All four were variables from the original togetherness factor: "we joke with each other", "we try to make sure all players are included", "we make these comments at appropriate times", and "we make it clear that we are joking". Like Closeness, this factor represents a more specific component of what was originally

defined as togetherness. It revolves around unity and belonging as communicated through jokes, but jokes that must be made responsibly so as not to interfere with task orientation (i.e., appropriate times), or individual feelings (i.e., make it clear it is joking). This theme of responsible, good natured jokes aimed towards togetherness was Considerate communication, and is defined as those messages which communicate intra-team humour in a respectful fashion.

Over both samples, it appears that Angry communication is negatively correlated with Considerate communication and positively correlated with Close communication. The former relationship was apparent in both analyses, and significant in one, with the latter relationship significant both times. These findings are both reasonable and lend credibility to all three of these concepts as factors. The closer a team is, the more likely players are to honestly vent their emotions, however, this is not very considerate of one's teammates. These are all correlational findings, so no cause and effect relationship can be attempted.

Psychometric concerns. There are some concerns with this emergent three factor structure. Both procedures supported a three factor model, but the CFA suggested and sustained a one item transformation of both Close and Considerate communication. This clarification of structure is one of the benefits of a CFA, and in its latest state, the operationalization of effective communication includes one five item factor (Angry communication), and two four item factors (Considerate and Close communication). The one item which was transferred ("we joke with each other") also appears to be a better

intuitive fit with Considerate communication, which already included other items referring to joking between teammates.

Further issues include the reliability of the factor of Angry communication and the differences between samples on MANOVAs. Anger showed a Cronbach's alpha of .74 through the EFA sample and .59 in the CFA sample. This second value in particular should be interpreted with caution. Within this factor, there were incompatible results with respect to a significant gender difference in communication. In both samples, males communicated Anger more frequently, but this was a significant difference only in the first sample. While it is discouraging to find significance in only one of the analyses, the fact that both samples showed extremely similar patterns (a mean difference of approximately 0.5 out of 7) is encouraging.

The Goodness of Fit for this model over both factor analyses was acceptable but not particularly strong. The EFA showed an excellent ratio of χ^2 to degree of freedom, but while the Goodness of Fit for the CFA model was acceptable, the RMSEA was poor. Overall, the present research offers tenable support for the stability and reliability of a three factor model, but further work is required.

The current relationships between team cohesion and communication definitely offers strong support to the validity of the construct of effective communication. Through both samples, the resources of Close and Considerate communication were highly related to all aspects of cohesion, and the exchange of Angry communication negatively correlated with task cohesion.

In summary, the psychometric qualities of this scale are not excellent but promising. It appears that the communication resources of Considerate, Close, and Angry communication are fairly stable and reliable (especially the first two), that the concepts are effective in logically predicted fashions, and that the overall structure of the construct of effective communication may be sound, if not unmitigated. However, more work is need to be done before one can have complete faith in the structure of this measurement.

The Construct of Effective Communication

This dissertation was designed to clarify the concept of effective communication within sports teams. This refers to the style of intra-team discussions which in some fashion enhances team and individual capabilities. Thus far, there are three distinct factors to such communication: Close, Angry, and Considerate communication.

The relationships between these factors and the four cohesion factors further clarify the construct of effective communication. As was shown in Tables 4 and 6, a stable pattern of relationships between effective communication and cohesion were apparent in this research.

While the three factors of effective communication were not the hypothesized ones, they were all complete components of one of the original five. Thus, while no hypotheses were made regarding these three factors, those made concerning Togetherness and Conflict may be illuminating.

Close and Considerate communication both comprised items entirely from the supposed factor of Togetherness, which was predicted to be positively correlated with

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both social cohesions (i.e., Group Integration - Social and Individual Attraction to Group - Social). Closeness was found to be related positively to all aspects of cohesion (task as well as social), through both samples, with all but one relationship significant at $p < .001$. As a resource of communication, Close communication refers to intra-team exchanges of a sense of shared inclusion. This is communicated through messages of closeness (e.g., nicknames, physical touch) which people outside of the team could not appreciate. These exchanges appear to be indicative of what Sullivan (1993) termed acceptance, and are at the heart of what various authors (e.g., Prappavessis et al., 1997, Yukeson, 1997) have suggested as elementary elements of team-building within sports: a sense of valued distinctiveness.

Surprisingly, this aspect of communication was related to task cohesion as well (but not as strongly) as social cohesion. This may be one example of the impact of the context of communication. While these athletes participate in a largely social style of communication (e.g., use nicknames, physically include one another), this is done in a largely task-oriented context. Therefore, these messages are important in a task-orientation. While individuals may be communicating acceptance as members of a distinctive group, this group is, in fact, a team with certain shared ambitions. Thus, what appears to be a social message, is also a task style of communication because of the strong task circumstances.

Angry communication consisted of five of the items from the proposed factor of Conflict. It was defined as the communication of honest reaction to disagreements within

the team. Between the two samples, it was negatively correlated to ATG-T both times, and GI-T once. Conflict was predicted to be negatively correlated with all four aspects of cohesion.

Conflict has been one of the under-examined group dynamics within sport, but it has been noted that expressions of hostility between teammates should be detrimental to team cohesion (Copeland & Wida, 1996). Brawley et al. (1988) found that more cohesive teams were more resistant to intra-team conflict, suggesting a negative relationship between the two dynamics. This possibility was further supported by Sullivan and Feltz (2000) who found that use of certain negative conflict resolution strategies (e.g., sarcasm, personal criticism) was related to lower perceptions of cohesiveness. Presently, reactions to conflict which involve the overt expression of anger is negatively related to task, not social cohesion. Again, this may be due to the overwhelming task constraints of even recreational sport teams. Considering that sports teams exist with obvious task indicators, if not objectives, any intra-team conflicts may have a more obvious impact on these task dynamics. While these disagreements and explosive reactions may be understandable as social interactions, they interfere with task objectives.

Considerate communication refers to those messages which respectfully display the fun and humour of being a team member. As was predicted for Ttogetherness as a complete factor, this style of communication was significantly related to all four cohesion factors at $p < .001$ in both samples. In particular the correlations to both task cohesions (i.e., Group Integration - Task, Individual Attraction to Group -Task) were quite strong,

with this one factor of communication accounting for almost 25% of the variation in Group Integration - Task in one sample. Given that Consideration is largely a social style of communication, it is interesting that it shows such powerful correlations to task cohesion. Participants were specifically asked to think not just of competitions, but practices and social situations involving team members. Still this communication, characterized by joking and respect, was related to task cohesion. It may be that the specific exchanges in which players try to communicate Consideration are task oriented topics. Teams may communicate humour and respect frequently, but as a motivational cue, not a strictly social one.

While the initial structure of effective communication includes Considerate, Close and Angry communication, this is not to say that more task oriented styles of communications are not important. Previous literature (e.g., Hanin, 1992; Widmeyer & Williams, 1991; Williams & Widmeyer, 1991), two primary phases of research, and intuition suggest that issues such as motivation and information should be important to team communication. While these factors did not presently emerge, that does not mean that the concepts do not exist.

Considering the combined relationships between communication and cohesion, these findings can help to qualify some earlier positions. Previous discussion on the relationship between communication and cohesion in sports teams has been hampered by poor measurement of communication (particularly when compared to cohesion). Still, various authors have commented on the importance of this relationship. Carron (1986)

noted that as teams become more cohesive, they become more open and receptive, talk more, and listen better. Alternatively, it may be that communication enhances team cohesion, through verifying group structure (Williams & Widmeyer, 1991). The present study cannot resolve this debate, however, it does provide greater support that there is a definite link between cohesion and communication. Further, there is now a stable operationalization of exactly what kind of communication is involved in these relations. Exchanges which communicate Close and Considerate communication are the particular styles of communication which contribute to cohesion, while the discussion of Angry communication is detrimental to it.

The initial structure of effective communication which resulted from the present research is an improvement on what had previously been theoretical commentary and poorly operationalized investigations. For example, Williams and Widmeyer (1991) found that communication accounted for 5% of the variation in cohesion scores when they measured the amount of tips players give each other about their play. By comparison, the data driven, theoretically based factor of Considerate communication appears to account for almost one quarter of the variance in GI-T. This would leave one to conclude that the impact of communication on cohesion has been underestimated, or measured inappropriately.

The significant difference between male and female athletes with respect to Angry communication may also be interpreted as some support for construct validity. Female athletes were found to communicate messages of anger significantly less frequently than

males in one sample, while this difference approached significance in the other. To examine the possibility that this effect may be due to sport as much as gender, a separate MANOVA was conducted for the only sport with relatively equal and sizeable numbers of male and female participants: track and field. Within this sport, the same pattern emerged. A significant effect for gender was due to the higher mean on Anger scores for males (3.79) than females (3.12), t (1. 79) = 2.39, p < .025.

While there is no specific research on gender differences in communication within sport, communication research outside of sport has noted similar gender differences. It is quite common for males to openly display anger more frequently than females (Fehr, Baldwin, Colins, Patterson & Benditt, 1999; Timmers, Fischer & Manstead, 1998). Further, it appears that while overt acts of anger are not typical for females, they are acceptable, even appropriate for males (Campbell & Muncer, 1987). Within sport psychology, there is a gender difference in basic orientation to sport, with females being much more concerned with interacting, socializing, and the feelings of others than males (Reis & Jelsma, 1978). Given this broader picture, one would expect a gender difference in the expression of anger, and, having found one, we can feel more confident that this is indicative of the true nature of the concept.

One interesting side note to gender differences in team communication: in one of the very few empirical studies to examine social communication in a sport setting, DiBerardinis and his colleagues (1983) studied the styles of interpersonal relations in a volleyball team. They found a positive, significant relationship between individual

performance and such factors as reaction to the opposing opinions of each other, reaction to conflict and antagonism from each other, and willingness to discuss feelings and emotions with each other. This study used female athletes, and given the present finding, one may well wonder if the same result would have been shown with male volleyball players.

Effective Communication as a Resource

The present operational definition of communication was "a symbolic process by which two people, bound together in a relationship, provide each other with resources, or negotiate the exchange of resources" (Roloff, 1981, p. 30). The particular resources of effective communication are Close, Angry, and Considerate communication. Close communication is defined as those verbal and non-verbal exchanges which send the message of a shared inclusion . Angry communication was defined as the verbal and non-verbal expression of disagreement, displeasure or anger. Considerate communication was defined as those messages which communicate intra-team humour in a respectful fashion. As was posed in the Statement of Problem, complete operationalization of communication should include social as well as task, and verbal as well as non-verbal interchanges. These three factors include both verbal comments and physical gestures, tone of voice, physical spacing between teammates, and the concept of timing of comments. As has been previously discussed, these factors all inherently reflect social styles, but due to the underlying task orientations of these groups, have large task bearings. This can be seen in the strong relationships all factors of effective communication have to task cohesion.

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For any exchange to be a resource, it must be valued by the actors. These factors have been verified as valuable. Three stages of research have clarified that athletes perceive them to be poignant and indicative of team processes. These perceptions have been supported by individual (e.g., open ended survey), and collective (e.g., focus group) opinion. The value of these resources can also be seen in that they are related to cohesion, which in itself is an effective and valued team attribute.

These three factors are all commodities which may be exchanged through interpersonal interactions. Thus, they can both be considered resources according to Foa and Foa's (1974) framework. In the Foas' lexicon, these are symbolic and particularsitic resources. Both are particularistic in that their value depends on who gives them. All three stages of research specifically focused on in-team communication, so these results are all based on the perceptions of the sources, specifically teammates.

In terms of the six classes of resources in the resource theory, each of these three factors of effective communication appear to be factors within the ranges of love, information, and status. Love is any expression of affection warmth, or regard, status is the expression of judgment which includes a degree of prestige. Close communication deals with the affection that comes from teammates who chose to include you, for example through (hopefully endearing) nicknames. Further, these messages deal with the resource of the status of belonging on a team (i.e., through communications outsiders would not understand). Because Foa and Foa (1974) state that both love and status are broad ranges of resources, and that neighboring classes may be interchangeable, Close

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communication may be seen as a sports-specific "border dwelling" resource.

The Foas defined information to include advice or opinion, and Angry communication as a resource appears to concern opinions and how they are expressed within teams. The questions on conflict resolution asked individuals to think about how they handled conflicts within the team. The particular items which emerged from the factor analysis to form this factor all deal with how this conflict is expressed (e.g., communicate anger through body language, communicate messages through other players when upset, ...). These all reflect how one expresses one's opinion, as opposed to expressing warmth or regard. Considerate communication as a resource is apparently a more complete example of love. Through joking, and doing so in an appropriate fashion, teammates may interchange feelings of affection and warmth.

In applying Foa and Foa's (1974) resource theory to sports-specific communication, this dissertation has defined three sports-specific sub-resources of love, information and status: Close, Angry, and Considerate communication. Because these resources are rooted in the Foas' theory, some key principles apply to them. First, the exchange of these resources will rarely take place in pure form. This means that athletes may offer and receive consideration and closeness in the same exchange. For example, a basketball team may have its own version of a "high five", a gesture which at the same time includes a player as a part of the team while being an in-group joke. As well, because they are particularistic and symbolic, we can expect that these three resources may be exchanged with each other. If an athlete receives a statement of anger (e.g., a shouted

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remark during a disagreement), she may respond with a statement of closeness (e.g., using team slang).

Previous Research

Prior to this dissertation a wide variety of styles and topics of communication were thought to be important in team sports. These included tips about play (Widmeyer & Williams, 1991); orientation, stimulation, evaluation and task irrelevant comments (Hanin, 1992); valuing, genuineness, understanding and acceptance (Sullivan, 1993), openness, honesty and directness (Yukelson, 1997); and trust, toleration of differences, ability to listen in an understanding way, and reaction to opposing opinions (DiBerardinis et al., 1983; Sullivan, 1995). This diversity is the result of several factors. Some are research items, and some informed opinion. They are based on different definitions of communication, and all lack a strong theoretical basis.

The present research attempted to resolve many of these issues. The result was three styles of communication. Two of these (Considerate and Close communication) were factors which reflected the degree of togetherness communicated between teammates. A large part of the rationale for the present research was to confirm a more social conceptualization of team communication. These two factors represent the result of this aim. Because these factors are based on sports-specific, data-driven research, they are more appropriate than the measurement used by DiBerardinis et al. (1983) and Sullivan (1995) to measure the social aspects of conversations within team sport. Further, compared to Sullivan (1993), it appears Close and Considerate communication are a more

parsimonious representation of team communication than valuing, accepting, genuineness, and understanding.

Researchers have mentioned how teammates should be open (Yukelson, 1996) and disclose their emotion (Stokes at al., 1983). The factor of Angry communication acknowledges that such processes are not only natural, but sometimes negative experiences. A complete measurement of team discussion must acknowledge the unpleasant reality which comes when individuals attempt to coordinate motives and efforts towards a common end. Some previous studies (i.e., DiBerardinis et al., 1983; Sullivan, 1995) have included items measuring the expression and reaction to anger and hostility, but those measurements were borrowed from other areas of group dynamics and have been criticized as inapplicable to sport psychology. The present instrument was specifically designed for the sports team.

While these factors are largely social issues (i.e., not directly concerned with the task at hand), they were strongly associated with task cohesion. Further, neither of the more task-oriented issues (e.g., instruction and motivation) emerged as consistent factors of communication. As was stated in Chapter 1, any communication is defined by its context. Sport presents a rich task-oriented context, even for recreational teams. Thus, we can expect all communication within this system to be influenced by it. Perhaps the lack of strictly task resources is due to the fact that when these social resources are communicated, they are still part of a task context. Thus, when an athlete is being considerate, she is being considerate of a teammate who is trying to achieve or accomplish

a task. When one is communicating closeness, he is stressing the identity of a group

which exists to achieve a goal. Thus, while items such as those measured by Widmeyer

and Williams (1991) and Hanin (1992) cannot be seen as fitting with the concepts of Close

, Angry, and Considerate communication, they still may be a part of the communication

environment which these factors conceptualize.

While the results of this dissertation are only an initial operationalization of

effective team communication, the present three factors of effective communication are in

some ways more complete than previous conceptualizations of intra-team communication.

Specifically, a concerted effort was made to include both verbal and non-verbal aspects of

communication. The qualitative studies included here clearly showed that athletes valued

the use of body language and space, as well as tone of voice and other paralinguistics.

These items were included in the final questionnaire and several emerged through the

factor analysis (e.g.,shouting when upset, "getting in each others faces", use of gestures).

The result is, as was hoped, a well-rounded operationalization of team communication:

social and task issues, verbal and non-verbal messages.

Future Directions

Although this dissertation did not satisfy the specific hypotheses presented, it did

fulfill its main objective. The conclusion of this work is a preliminary product to measure

effective intra-team communication in sports. A sound theoretical framework (one of the

main weaknesses of previous work) was used to organize athletes' own perceptions of

team communication. These resultant items were subject to factor analysis, resulting in a

multi-factorial representation of effective team communication which could be understood in terms of resources exchanged through discrete (verbal and non-verbal) acts. These styles of communication were supported as effective through their relationships to team cohesion.

Presently, there appears to be a three factor construct of effective communication, each factor is measurable through four or five questions. See Appendix J for a copy of this instrument as it presently appears. This opeationalization requires further clarification, if just because of the questionable psychometrics of the structure.

In a similar process, Vealey and colleagues (1998) designed a measurement for sport confidence through four phases of data driven research. Within each phase the psychometric properties of the instrument were examined, and open ended questions were included to identify further issues within the construct. It is suggested that at least one more study in this line of research follow this protocol. Specifically, the present 13 item questionnaire should be administered to a sizeable sample, as well as open ended questions soliciting further opinions on the nature of each of these three factors of effective communication. As well, open ended questions could be included to explore the possibility of other factors of effective communication not presently included (e.g., instruction, motivation). While more task oriented topics of communication were predicted to be included in the final product, this did not happen. This may be partially due to the exact phrasing of the items on the survey used for the factor analysis. A second process of item generation for these resources may uncover what previous literature and pilot studies

suggested exists.

Beyond this proposed work, future research should focus on expanding the effectiveness of these resources of communication. The relationships between effective communication and team performance (for both interacting and coacting teams), and different psychological constructs should be further explored. These could include both individual (e.g., player satisfaction), and team level (e.g., collective efficacy) issues. The actual effectiveness of these three communication resources could be further clarified in terms of these and other outcomes.

Other research topics could include further clarification of the gender differences of Angry communication, as well as the role of effective communication at different levels (e.g., youth sport, national teams, professional sports). Finally, this research could support many applications. Teams desiring the outcome of enhanced cohesiveness (and supposedly increased player satisfaction, team performance and confidence) could follow structured programs designed to increase the intra-team exchange of Close, Angry, and Considerate communication.

APPENDIX A

Internal Review Board Approval

MICHIGAN STATE
U N I V E R S I T Y

January 4, 1999

TO: Dr. Deborah Feltz
    138 IM Sports Circle
    Dept. of Kinesiology
    MSU

RE: **IRB # 97875** CATEGORY: 1-C
    RENEWAL APPROVAL DATE: January 4, 1999
    TITLE: AN INVESTIGATION INTO THE SOCIAL DYNAMICS OF TEAM SPORTS

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS **APPROVED THIS PROJECT'S RENEWAL** .

RENEWALS: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for a complete review.
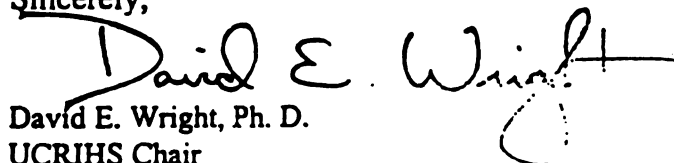
REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email:
UCRIHS@pilot.msu.edu. Please note that all UCRIHS forms are located via

Sincerely,

David E. Wright, Ph. D.
UCRIHS Chair

DEW: db
Philip Sullivan

APPENDIX B

Informed Consent Forms

Consent Form
Department of Physical Education and Exercise Science
Michigan State University

Team Dynamics

I freely consent to participate in this study conducted by Dr. Deborah L. Feltz, Professor and Chair of the Department of Physical Education and Exercise Science, at Michigan State University.

This study is concerned with group dynamics within sports teams.

I understand that I am free to refuse to participate in certain procedures, answer certain questions, or discontinue participation at any time without penalty.

I understand that if I decide to participate in this study, it will take about ten minutes or less to complete this survey. Questions will be completed under the instruction of an investigator from Michigan State University.

I understand that all information from this study will remain anonymous in any report of these research findings.

I agree to participate in this study.

_____   _____
Signature   Date

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APPENDIX C

Study 1 Open Ended Survey

I am interested in communication within sports teams. Think for a minute about <u>how</u> members of a sports team communicate with each other and list everything about that communication which you think is important. Thank you.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

APPENDIX D

Items Reported in Study 1, grouped by factor and frequency

Support

honesty (6)
sincere (4)
listening (3); listen to teammates; listening to comments
sympathetic (3); sympathy
understanding (3); understanding each other (2)
trust (3)
openness (2)
empathy (2)
supportive (2); support everyone
compassion (2)
open minded
heart
awareness
no intimidating
talk about it
console
helping each other
friendly
comfort/acceptance
sharing
approachable
emotion
nice
patience
positive atmosphere
truthfulness
being open minded
sensitive; sensitive to the emotions of others
feeling
frankness
confidence
trustworthy
respect
gentle
forgiving
considerate
positive comments
encouraging
inclusive

<u>Togetherness</u>
sarcasm (6)
humour (5); jokes (5)
over a beer (4)
socialization (4)
togetherness (3)
laughter (3)
fun (3)
allows sense of team development (2)
teamwork (2)
friendship(2); form friendship
unity (2)
nicknames (2)
slang (2)
form chemistry
talk about basic team aspects
camaraderie
don't talk about the individual
team concept
build bonds
sense of belonging
team bonding
team unity
keep team focused
sociable
uniqueness
common passion
same page
less tension
trashy
friendly banter
enjoyment
interest in team
cooperation
cheer for each other
partying
inclusive
no cliques
all equal
create team atmosphere
no fighting
shared goals

lighten mood; relieve tension
shared control
desire to do well as a team
feel as though one of the team
hang around together
family
loyalty

Physicality

loudness (8); volume
eye contact (8); eye motion (2)
body language (7)
tone of voice (4); verbal tone; tone (2)
hand signals (3); hand gestures hand gestures
facial expression (3)
hand motion (2)
vocal (2)
verbal (2)
voice (2)
vocabulary
scream
head motion
signals
non-verbal communication; non verbal
touch; physical contact
no yelling
verbal
intensity
keep negative body language out
pat on back
nice attitude and voice
tact
focus
reaction time
timing

Instruction

constructive criticism (4)
educational (3)
understandable (3)
congratulations (2)
encouraging (2)
compliment (2)
criticize
leadership
teaching
serious
generate momentum
increase enthusiasm
motivational
creative
positive and negative feedback
effective
specific instruction
helpful
keep team focused
intense
discipline
constructive
building teammates self-esteem
questioning
instructive; instruction
gameplan
teaching
help
explaining
tactics
lecture
transfer new ideas
better understanding of systems
guidance
praise
feedback
approval
reinforcement

Conflict Management

discuss calmly (2)
compromise (2)
resolve problems calmly
try to communicate positively
less arguments
treat problems as a team
get all beefs out in the open
calm
ask to help make it easier for others
talk ideas/solutions
explore options
talks things bout
express feelings and calmly discuss
relieves tension
no personal attacks
leave conflict out of game
no arguing on court
compromise
opinionated
think before you talk
communicate problems
do not single out
opnly discuss solutions

Clarity
clear (2)
participation (2)
direct
to the point
direct at the person
straightforward
concise
coherent
direct
specific to the problem
have outline
specific
clarity
serve a purpose
reliable
no interruptions
discussion of issues
one on one

APPENDIX E

Focus Group Interview Guide

The following list of questions were used in the focus group phase or research. One main research question, leading question and testing question were designed for each factor derived from the first phase. They are presented in that order for clarity, support, instruction, togetherness, conflict management, and then physicality.

What are some ways to communicate clearly within a team?

Why should communication be clear?

Can you think of any instances when communication should not be clear?

How can you communicate to a teammate that you support him/her?

Why should you tell teammates you support them?

Are there any times you think you would not want to support a teammate or receive support from them?

On what kinds of topics do players need instruction?

Is it better to instruct a group or individual?

In your opinion, is there such a thing as too much instruction?

What are the best ways to communicate togetherness?

When would it be difficult to discuss team unity?

Can togetherness be talked about too much?

How would you handle a disagreement with a teammate?

Why is it important to communicate about potential conflict?

In your opinion, are there times when it may be better to ignore disagreements?

What parts of a message are communicated aside from verbal communication?

How important is non-verbal communication?

Can non-verbal communication be a problem?

APPENDIX F

Study 3 Survey

Are you:

      1. Male

      2. Female

How old are you? _____

What sport do you play? _____

What team do you play on? _____

How long have you played with this team? _____ seasons

The following items are concerned with how the players on your team (and only the players) usually communicate to each other. They refer to any situation in which teammates interact, not just games and practices. Please consider the team as a whole when answering the questions. Read each question carefully and answer honestly. The questionnaire will deal with different kinds of communication in turn. Thank you.

.

Teammates may communicate to motivate each other. This refers to discussions which intend to arouse, encourage or focus each other.

These questions refer specifically to communication of motivation between players. When our team communicates to motivate, we ...

1. make eye contact to make sure we're "on the same page"

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

2. shout to give inspiration

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

3. use physical gestures such as high fives and pats on the back to congratulate

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

4. physically get very close to teammates when trying to encourage them

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

5. show how excited we are without using words

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

6. praise verbally

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

7. allow everyone to talk at once

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

8. think clearly before we speak

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

9. choose our words carefully so they are clear

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

10. try to keep negative body language out

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

Teammates may communicate to inform each other. This refers to the giving and

receiving knowledge, facts and "how to" knowledge.

These questions refer specifically to communication of instruction between players.

When our team communicates to instruct, we ...

11. make eye contact while explaining

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

12. talk quietly when explaining

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

13. use constructive criticism

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

14. express ideas in a straightforward way

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

15. act out technique to show how to do it

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

16. use facial expressions to show attentiveness

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

17. maintain a physical distance between who explains and who listens

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

18. talk one on one

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

19. use physical touch when explaining

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

20. give feedback to show what is being instructed is understood

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

Teammates may communicate to support each other. This involves communication which

empathizes with each other and accepts the individual.

These questions refer specifically to communication of support between players.

When our team communicates to support each other, we ...

21. are sympathetic to each other's point of view

Hardly   1   2   3   4   5   6   7   Almost
Ever   Always

22. express sincerity through facial expressions

Hardly   1   2   3   4   5   6   7   Almost
Ever   Always

23. trust each other

Hardly   1   2   3   4   5   6   7   Almost
Ever   Always

24. communicate our feelings honestly

Hardly   1   2   3   4   5   6   7   Almost
Ever   Always

25. use appropriate tone of voice

Hardly   1   2   3   4   5   6   7   Almost
Ever   Always

26. share thoughts with each other

Hardly   1   2   3   4   5   6   7   Almost
Ever   Always

27. maintain relatively equal body space with all teammates

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

28. display mutual respect

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

29. are patient when others are talking

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

30. show that we accept each other through body language/physical touch

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

Teammates may communicate to handle conflicts. This refers to attempts to

constructively handle disagreements, or make sure they do not happen at all.

These questions refer specifically to communication to handle conflict between players.

When our team communicates to handle conflicts, we ...

31. can clearly express when we are upset

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

32. when disagreements arise, try to communicate directly with those we have problems
with

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

33. shout when upset

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

34 communicate anger through body language

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

35. express our feelings calmly

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

36. communicate messages through other players when upset

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

37. get all problems out in the open

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

38. resolve problems calmly

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

39. get "in each other's faces" when we disagree

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

40. try to keep disagreements off the field/court

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

Teammates may communicate to stress togetherness. This is communication which tries

to enhance team unity and individual's sense of belonging.

These questions refer specifically to communication of togetherness between players.

When our team communicates togetherness, we ...

41. use nicknames

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

42. joke with each other

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

43. use physical contact to include each other in conversations

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

44. use slang that only people on the team would understand

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

45. use gestures that only people on the team would understand

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

46. focus mostly on game performance

Hardly 1   2   3   4   5   6   7   Almost
Ever   Always

47. try to make sure all players are included

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

48. make these comments at appropriate times

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

49. talk loudly

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

50. make it clear that we are joking

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

APPENDIX G

The Group Environment Questionnaire

This questionnaire is designed to assess your perceptions of your athletic team. There are no right or wrong answers so please give your immediate reaction. Some of the questions may seem repetitive, but please answer all questions. Your candid responses are very important to us.

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

	Strongly Disagree							Strongly Agree	
I do not enjoy being a part of the social activities of this team.	1	2	3	4	5	6	7	8	9
I'm not happy with the amount of playing time I get.	1	2	3	4	5	6	7	8	9
I am not going to miss the members of this team when the season ends.	1	2	3	4	5	6	7	8	9
I'm unhappy with my team's level of desire to win.	1	2	3	4	5	6	7	8	9
Some of my best friends are on this team	1	2	3	4	5	6	7	8	9
This team does not	1	2	3	4	5	6	7	8	9

give me enough opportunities to improve my personal performance.

I enjoy other parties   1   2   3   4   5   6   7   8   9

more than team parties.

I do not like the style   1   2   3   4   5   6   7   8   9

of play on this team.

For me this team is   1   2   3   4   5   6   7   8   9

one of the most important social groups to which I belong.

The following questions are designed to assess your feelings about YOUR TEAM AS A

WHOLE. Please circle a number from 1 to 9 to indicate your level of agreement with

each of the statements.

Our team is   1   2   3   4   5   6   7   8   9

united in trying to reach its goal.

Members of our   1   2   3   4   5   6   7   8   9

team would rather go out on their own than get together as a team.

We all take   1   2   3   4   5   6   7   8   9

responsibility for any loss or poor performance by our team.

Our team   1   2   3   4   5   6   7   8   9

member rarely party.

Our team   1   2   3   4   5   6   7   8   9

members have conflicting aspirations for the team's performance.

Our team   1   2   3   4   5   6   7   8   9

would like to spend time together in the off-season.

If members   1   2   3   4   5   6   7   8   9

of our team have problems in practice, everyone wants to help them so we can get back

together again.

Members of our   1   2   3   4   5   6   7   8   9

team do not stick together outside of practices and games.

Our team   1   2   3   4   5   6   7   8   9

members do not communicate freely about each athlete's responsibilities during

competition or practice.

APPENDIX H

EFA Factor Loadings after Varimax Rotation ($\underline{n}$ = 251).

	Factor				
	1	2	3	4	5
SMEAN(CONFL1)	-7.409E-03	.422	6.756E-02	.153	.230
SMEAN(CONFL10)	6.728E-02	-.166	.237	.282	1.618E-02
SMEAN(CONFL2)	.132	6.863E-02	.171	.151	.173
SMEAN(CONFL3)	9.339E-02	.830	-.131	-.135	9.877E-03
SMEAN(CONFL4)	.157	.738	-6.359E-02	-.144	-1.394E-02
SMEAN(CONFL5)	-3.173E-02	-.269	.130	.737	9.106E-02
SMEAN(CONFL6)	.240	.413	-7.012E-02	.107	-3.647E-02
SMEAN(CONFL7)	6.997E-02	.213	.144	.238	.224
SMEAN(CONFL8)	8.449E-03	-.177	.174	.773	.172
SMEAN(CONFL9)	7.422E-02	.658	-2.609E-02	-.227	-3.186E-02
MEAN(INSTR1,2)	8.375E-02	-4.796E-02	.126	9.411E-02	.112
MEAN(INSTR10,2)	4.165E-02	-3.155E-02	-5.125E-03	.133	.212
MEAN(INSTR2,2)	-2.235E-03	6.877E-02	7.601E-02	.337	6.368E-02
MEAN(INSTR3,2)	6.081E-02	-.108	.107	.161	4.107E-02
MEAN(INSTR4,2)	4.788E-02	-6.983E-02	.139	.110	.155
MEAN(INSTR5,2)	.159	9.620E-03	-.124	-3.119E-03	.162
MEAN(INSTR6,2)	.143	1.433E-02	.139	9.181E-02	2.400E-02
MEAN(INSTR8,2)	-1.375E-02	2.490E-02	9.305E-02	.157	.237
MEAN(INSTR9,2)	7.967E-02	.207	.116	6.089E-02	4.767E-02
MEAN(ISNTR7,2)	1.828E-02	.266	9.231E-02	8.565E-02	9.613E-02
MEAN(MOTIV1,2)	4.627E-02	6.986E-02	7.812E-02	-7.768E-02	.226
MEAN(MOTIV10,2)	-3.773E-02	-.354	.198	.179	.127
MEAN(MOTIV2,2)	3.915E-02	-3.805E-03	5.213E-02	4.142E-02	3.431E-02
MEAN(MOTIV3,2)	.218	-9.235E-02	.171	5.546E-02	7.396E-02
MEAN(MOTIV4,2)	.163	3.182E-02	.113	-4.547E-02	8.709E-02
MEAN(MOTIV5,2)	.237	-1.071E-02	.110	-1.909E-02	.173
MEAN(MOTIV6,2)	8.667E-02	-7.588E-02	.139	8.066E-03	.217
MEAN(MOTIV7,2)	4.693E-02	-9.369E-02	9.025E-02	.139	-3.997E-02
MEAN(MOTIV8,2)	6.995E-03	-2.491E-03	.161	.160	.131
MEAN(MOTIV9,2)	6.766E-03	-9.283E-02	.130	.125	.114
MEAN(SUP1,2)	1.163E-02	-.229	.189	.255	.367
MEAN(SUP10,2)	.127	-5.499E-02	.322	.108	.100
MEAN(SUP2,2)	.180	-8.871E-02	.166	.180	.254
MEAN(SUP3,2)	.104	-6.105E-02	.175	.144	.832
MEAN(SUP4,2)	.101	.104	.203	.121	.605

Extraction Method: Generalized Least Squares.
Rotation Method: Varimax with Kaiser Normalization.

Rotated Factor Matrix[a]

	Factor				
	1	2	3	4	5
MEAN(SUP5,2)	5.565E-02	-8.127E-02	.329	.367	.269
MEAN(SUP6,2)	.158	8.235E-02	.131	.236	.428
MEAN(SUP7,2)	-5.720E-02	6.243E-02	.259	.406	.112
MEAN(SUP8,2)	8.088E-02	-.216	.330	.280	.376
MEAN(SUP9,2)	5.796E-02	-.253	.376	.359	.280
MEAN(TOG1,2)	.663	.129	6.167E-02	-.130	7.937E-02
MEAN(TOG10,2)	.165	-7.845E-02	.519	.181	.118
MEAN(TOG2,2)	.467	6.983E-03	.174	.111	.149
MEAN(TOG3,2)	.503	7.316E-02	.257	.168	.101
MEAN(TOG4,2)	.862	.121	4.093E-02	7.410E-02	2.556E-02
MEAN(TOG5,2)	.880	.109	4.100E-02	-4.805E-02	5.465E-02
MEAN(TOG6,2)	2.789E-02	.199	.291	2.950E-02	.214
MEAN(TOG7,2)	8.412E-02	-8.506E-02	.693	.138	.204
MEAN(TOG8,2)	.111	-.112	.694	.190	.140
MEAN(TOG9,2)	.296	.373	.256	-3.771E-02	-3.518E-02

Extraction Method: Generalized Least Squares.
Rotation Method: Varimax with Kaiser Normalization.

Rotated Factor Matrix[a]

	Factor				
	6	7	8	9	10
MEAN(SUP5,2)	-6.561E-02	.156	.119	.108	.282
MEAN(SUP6,2)	.296	.105	.151	.119	.191
MEAN(SUP7,2)	-.139	.131	4.318E-02	.104	.349
MEAN(SUP8,2)	4.034E-02	7.764E-02	.175	.242	.167
MEAN(SUP9,2)	-1.715E-02	.220	-1.599E-02	.211	.310
MEAN(TOG1,2)	6.849E-02	3.318E-02	.175	-6.818E-02	.168
MEAN(TOG10,2)	.169	4.437E-02	.143	7.810E-02	6.970E-02
MEAN(TOG2,2)	4.437E-02	-4.944E-03	.245	-9.363E-02	.135
MEAN(TOG3,2)	.368	3.444E-02	.150	.167	-2.383E-02
MEAN(TOG4,2)	-2.457E-02	-5.653E-02	-4.921E-02	.102	1.120E-02
MEAN(TOG5,2)	.153	4.913E-02	-2.766E-02	.154	-3.162E-02
MEAN(TOG6,2)	.158	.149	3.954E-02	-3.658E-02	-2.010E-02
MEAN(TOG7,2)	8.381E-02	.172	.158	.157	5.403E-02
MEAN(TOG8,2)	7.038E-02	.210	-2.226E-02	.111	5.548E-02
MEAN(TOG9,2)	.162	-8.874E-03	.250	3.548E-02	-6.836E-02

Extraction Method: Generalized Least Squares.
Rotation Method: Varimax with Kaiser Normalization.

Rotated Factor Matrix[a]

	Factor				
	6	7	8	9	10
MEAN(SUP5,2)	-6.561E-02	.156	.119	.108	.282
MEAN(SUP6,2)	.296	.105	.151	.119	.191
MEAN(SUP7,2)	-.139	.131	4.318E-02	.104	.349
MEAN(SUP8,2)	4.034E-02	7.764E-02	.175	.242	.167
MEAN(SUP9,2)	-1.715E-02	.220	-1.599E-02	.211	.310
MEAN(TOG1,2)	6.849E-02	3.318E-02	.175	-6.818E-02	.168
MEAN(TOG10,2)	.169	4.437E-02	.143	7.810E-02	6.970E-02
MEAN(TOG2,2)	4.437E-02	-4.944E-03	.245	-9.363E-02	.135
MEAN(TOG3,2)	.368	3.444E-02	.150	.167	-2.383E-02
MEAN(TOG4,2)	-2.457E-02	-5.653E-02	-4.921E-02	.102	1.120E-02
MEAN(TOG5,2)	.153	4.913E-02	-2.766E-02	.154	-3.162E-02
MEAN(TOG6,2)	.158	.149	3.954E-02	-3.658E-02	-2.010E-02
MEAN(TOG7,2)	8.381E-02	.172	.158	.157	5.403E-02
MEAN(TOG8,2)	7.038E-02	.210	-2.226E-02	.111	5.548E-02
MEAN(TOG9,2)	.162	-8.874E-03	.250	3.548E-02	-6.836E-02

Extraction Method: Generalized Least Squares.
Rotation Method: Varimax with Kaiser Normalization.

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Rotated Factor Matrix[a]

	Factor		
	11	12	13
SMEAN(CONFL1)	.353	9.313E-02	.113
SMEAN(CONFL10)	4.958E-02	-5.202E-02	-7.680E-02
SMEAN(CONFL2)	.927	1.778E-02	2.202E-02
SMEAN(CONFL3)	.101	2.502E-02	3.656E-02
SMEAN(CONFL4)	-2.458E-02	7.314E-02	-4.457E-03
SMEAN(CONFL5)	.128	4.988E-02	-.111
SMEAN(CONFL6)	-6.185E-02	-.110	-4.040E-02
SMEAN(CONFL7)	.512	6.145E-03	-5.830E-02
SMEAN(CONFL8)	.153	2.818E-02	.117
SMEAN(CONFL9)	.120	-.135	-.116
MEAN(INSTR1,2)	-6.710E-03	.851	2.598E-02
MEAN(INSTR10,2)	.139	.232	4.939E-02
MEAN(INSTR2,2)	-4.467E-02	.225	-.357
MEAN(INSTR3,2)	.153	.327	-.215
MEAN(INSTR4,2)	5.311E-02	.151	4.660E-02
MEAN(INSTR5,2)	6.186E-02	3.125E-02	8.926E-02
MEAN(INSTR6,2)	.138	.191	9.797E-02
MEAN(INSTR8,2)	.103	.211	-9.029E-02
MEAN(INSTR9,2)	-6.237E-03	7.475E-02	2.555E-02
MEAN(ISNTR7,2)	.168	.106	-4.120E-02
MEAN(MOTIV1,2)	9.086E-02	.403	-2.777E-02
MEAN(MOTIV10,2)	.137	.167	-2.658E-02
MEAN(MOTIV2,2)	5.253E-02	.114	-2.515E-02
MEAN(MOTIV3,2)	-5.219E-02	5.407E-02	.333
MEAN(MOTIV4,2)	5.240E-02	.166	-4.875E-02
MEAN(MOTIV5,2)	3.055E-03	8.286E-02	-.189
MEAN(MOTIV6,2)	9.395E-02	-8.696E-03	.166
MEAN(MOTIV7,2)	9.927E-02	-2.948E-02	-.217
MEAN(MOTIV8,2)	5.364E-02	8.118E-02	-4.752E-02
MEAN(MOTIV9,2)	.108	3.185E-02	4.818E-02
MEAN(SUP1,2)	9.009E-02	7.614E-02	-.223
MEAN(SUP10,2)	3.112E-02	9.927E-02	.306
MEAN(SUP2,2)	8.396E-02	.103	-8.369E-02
MEAN(SUP3,2)	.108	.152	6.127E-02
MEAN(SUP4,2)	.238	2.511E-02	-8.731E-03

Extraction Method: Generalized Least Squares.
Rotation Method: Varimax with Kaiser Normalization.

Rotated Factor Matrix[a]

	Factor		
	11	12	13
MEAN(SUP5,2)	9.951E-02	6.921E-02	-6.137E-03
MEAN(SUP6,2)	.174	3.485E-02	-1.940E-03
MEAN(SUP7,2)	7.444E-02	.106	9.756E-02
MEAN(SUP8,2)	.167	.152	.132
MEAN(SUP9,2)	.131	1.298E-02	-4.338E-02
MEAN(TOG1,2)	2.000E-02	-1.892E-02	6.902E-02
MEAN(TOG10,2)	.118	1.261E-02	.214
MEAN(TOG2,2)	7.548E-02	.101	.420
MEAN(TOG3,2)	-5.171E-03	.108	.158
MEAN(TOG4,2)	5.992E-02	6.611E-02	3.012E-02
MEAN(TOG5,2)	7.958E-02	1.078E-02	-9.817E-02
MEAN(TOG6,2)	8.247E-02	-1.862E-02	-.106
MEAN(TOG7,2)	.108	.165	6.133E-02
MEAN(TOG8,2)	.126	7.252E-02	-.139
MEAN(TOG9,2)	5.569E-02	-3.694E-02	8.389E-02

Extraction Method: Generalized Least Squares.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Appendix I

Standardized Residual Matrix for CFA ($\underline{n}$ = 266)

STANDARDIZED RESIDUAL MATRIX:

		CONFL1_1 V 1	CONFL2_1 V 3	CONFL3_1 V 4	CONFL5_1 V 6	CONFL8_1 V 9
CONFL1_1	V 1	0.000				
CONFL2_1	V 3	0.315	0.000			
CONFL3_1	V 4	0.353	0.202	0.000		
CONFL5_1	V 6	-0.074	-0.033	-0.131	0.000	
CONFL8_1	V 9	-0.013	-0.010	0.005	0.009	0.000
TOG1_1	V 41	-0.023	0.067	0.142	-0.122	-0.052
TOG10_1	V 42	0.129	0.022	0.024	0.051	0.025
TOG2_1	V 43	0.096	0.138	0.080	0.022	0.082
TOG3_1	V 44	0.117	0.186	0.009	0.072	0.112
TOG4_1	V 45	0.021	0.089	0.208	-0.040	-0.093
TOG6_1	V 47	0.122	0.019	0.074	-0.031	-0.042
TOG7_1	V 48	0.140	0.136	0.021	-0.070	0.013
TOG9_1	V 50	0.036	-0.081	0.277	-0.136	-0.173

		TOG1_1 V 41	TOG10_1 V 42	TOG2_1 V 43	TOG3_1 V 44	TOG4_1 V 45
TOG1_1	V 41	0.000				
TOG10_1	V 42	-0.142	0.000			
TOG2_1	V 43	-0.006	0.059	0.000		
TOG3_1	V 44	-0.072	0.107	0.025	0.000	
TOG4_1	V 45	0.104	-0.123	-0.050	-0.012	0.000
TOG6_1	V 47	0.004	-0.042	-0.023	-0.028	0.080
TOG7_1	V 48	-0.070	-0.001	0.073	0.147	-0.125
TOG9_1	V 50	0.155	0.011	0.151	0.071	0.181

		TOG6_1 V 47	TOG7_1 V 48	TOG9_1 V 50
TOG6_1	V 47	0.000		
TOG7_1	V 48	0.042	0.000	
TOG9_1	V 50	0.112	-0.033	0.000

Appendix J

The Effective Communication Scale

as of the conclusion of the present research.

The following items are concerned with how the players on your team (and only the players) usually communicate to each other. They refer to any situation in which teammates interact, not just games and practices. Please consider the team as a whole when answering the questions. Read each question carefully and answer honestly. Thank you.

When our team communicates, we ...

1. can clearly express when we are upset

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

2. shout when upset

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

3. communicate anger through body language

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

4. communicate messages through other players when upset

Hardly 1   2   3   4   5   6   7 Almost
Ever   Always

5. get "in each other's faces" when we disagree

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

6. use nicknames

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

7. joke with each other

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

8. use physical contact to include each other in conversations

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

9. use slang that only people on the team would understand

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

10. use gestures that only people on the team would understand

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

11. try to make sure all players are included

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

12. make these comments at appropriate times

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

13. make it clear that we are joking

Hardly 1   2   3   4   5   6   7 Almost

Ever   Always

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