Team-Based Attitude: Theory Development, Inventory Construction, and Psychometric Analysis

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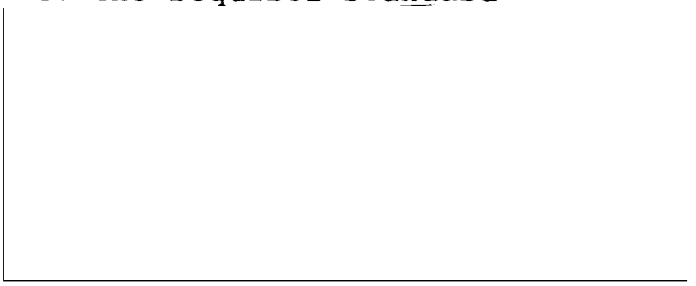

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ABSTRACT

The purpose of this study concerns the development of a valid and reliable team-orientation instrument which measures tendencies towards multidimensional team-based attitudes within interactive, interdependent elite sport groups. The theoretical basis utilized to build a conceptual model includes team norms and team dynamics. Specifically, the components hypothesized to tap team-based attitude include team maintenance, team identity, team unity, cohesive norms, task-orientation, team motivation and aspirations, and locomotive norms. Team norms and team dynamics theory, existing inventory content, and interviews with expert coaches and elite athletes were all considered in developing the initial item pool. Based on operational definitions, expert judges performed an initial validation by fitting items within the appropriate construct.

The empirical testing of the inventory was based on data from subjects (N=153) from the Canada West University Athletic Association. Lisrel VI confirmatory factor analysis, exploratory factor analysis, and reliability (internal consistency) were applied to the data. Factor loadings, goodness of fit index, chi-square to degrees of freedom ratio, root mean square residual, and Cronbach's alpha all provided evidence for initial support of the hypothesized factor structure.

A paired groups correlated t-test with a sub sample

(N=52) of the initial subject population provided evidence of reliability (stability) over time. A multivariate Hotellings T2 with individual subjects (N=53) and team subjects (N=53) resulted in significant differences between the two groups for all factors and a TBA total score. This known-groups difference test proved the inventory could differentiate between individual and team athletes, providing support for construct validity. Coaches rated players on their level of cohesion and locomotion. Correlation coefficients failed to produce relationships between the coaches rating and the athletes' TBA Inventory score. However, this may have been due to the low number of coach respondents (N=3), or the very source of external validation (the coaches' rating) being inaccurate.

The psychometric analysis provided support of the factor structure, along with reasonable validity and strong reliabiltiy results. Given the potential of the inventory in team dynamics research, sport scientists are encouraged to further test the TBA model, to develop a more parsimonious fit of the data to the model, inventory refinement, and population generalizability.

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ACKNOWLEDGEMENTS

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Chapter I

Introduction

The assumption by coaches that their athletes must work both with and for the team has not gone unnoticed by sport researchers. It is the willingness to work hard and make sacrifices for the benefit of the team that has been generalized and summarized by these coaches under the term "good attitude". Coaches have commonly interpreted 'attitude' as one's characteristics or tendencies as assessed by the resultant behavior and actions.

Coaches today generally agree that attitude is the most important attribute for an athlete, and it is a current coaching belief that a team-attitude is crucial to team success. Within a list of psychological attributes, coaches from NHL, Canadian University, and Major Jr. 'A' hockey teams consistently rated team attitudes a more important discriminator than individual attitudes for the athlete who desires to play within their league (Twist, 1987). It can be rationalized that a team-based attitude would be positively correlated to performance for interactive, interdependent sports, where a high degree of congruence and cooperation is required to achieve task demands.

The "essence of team sports is the effective integration of the individual with the team in pursuit of a common goal" (Jones & Williamson, 1979, p. 158). Eitzen (1975) refers to 'group oriented motivation' and suggests that team spirit will lead to successful team performance,

while Stogdill (1972) stated that group drive or group motivation is the variable most consistently related to productivity. Gruber and Gray rationalize that "coaches seek internal harmony among members so that efforts can be concentrated on effective team play and hopefully a winning season" (1981, p. 20).

It is common practice within the sport environment to strive towards developing coalition while criticizing egocentrism. Coaches most often desire an athlete who will direct his-her efforts towards maintaining group solidarity and achieving team goals. This reflects the assumption that, regardless of ability level, team-based attitude will increase the probability of success, and the more equal two teams are in terms of skill, the more important team-based attitude is in determining objective, quantified game outcome. Additionally, even highly skilled athletes, if acting as individuals, will be detrimental to team performance, as the individually-oriented athlete might participate for more personal reasons (Jones & Williamson, 1979). Although the existence and importance of personal goals is acknowledged, team goals must take priority for each athlete if the team is to be successful. Discrepancies in participation motives (individual versus team oriented) may have a negative effect on the team. Thus the coach encourages player behavior which is consistent with team goals and strategies (Botterill, 1978).

Need For A Team-Based Attitude Inventory

Interactive, interdependent sports definitely involve (and require) a cooperative, harmonious situation within the team, however an individual can be placed within this cooperative situation and not feel cooperative or be motivated by the necessary cooperation (Butt, 1987). The identification of team-based athletes and individualistic athletes, then, is important both for the coach who desires to optimize the probability of team success, and for the researcher who desires to examine individuals within a team and their effect on team processes and team success. Athletes bring certain characteristics to the sport situation, and make positive or negative evaluations on beliefs (cognitive) about the attitude object (in this case the team, the team's goals, team unity, etc.) which determine the direction and predisposition for certain behavior (team-based or individualistic behavior). Overt athlete behaviors, reflecting their attitudes, can be researched within the framework of team dynamics.

For The Coach. The assessment of an athlete's 'attitude' is paramount during the selection process (as opposed to assessing it in midseason). "If someone's goals are completely incompatible with the group goals and strategies, the beginning of the year is the time to find out" (Botterill, 1978, p. 14). Unfortunately, in practice such evaluation has been dependent on a subjective process.

INDIVIDUAL CHARACTERISTICS OF TEAM MEMBERS:

TEAM-BASED ATTITUDE

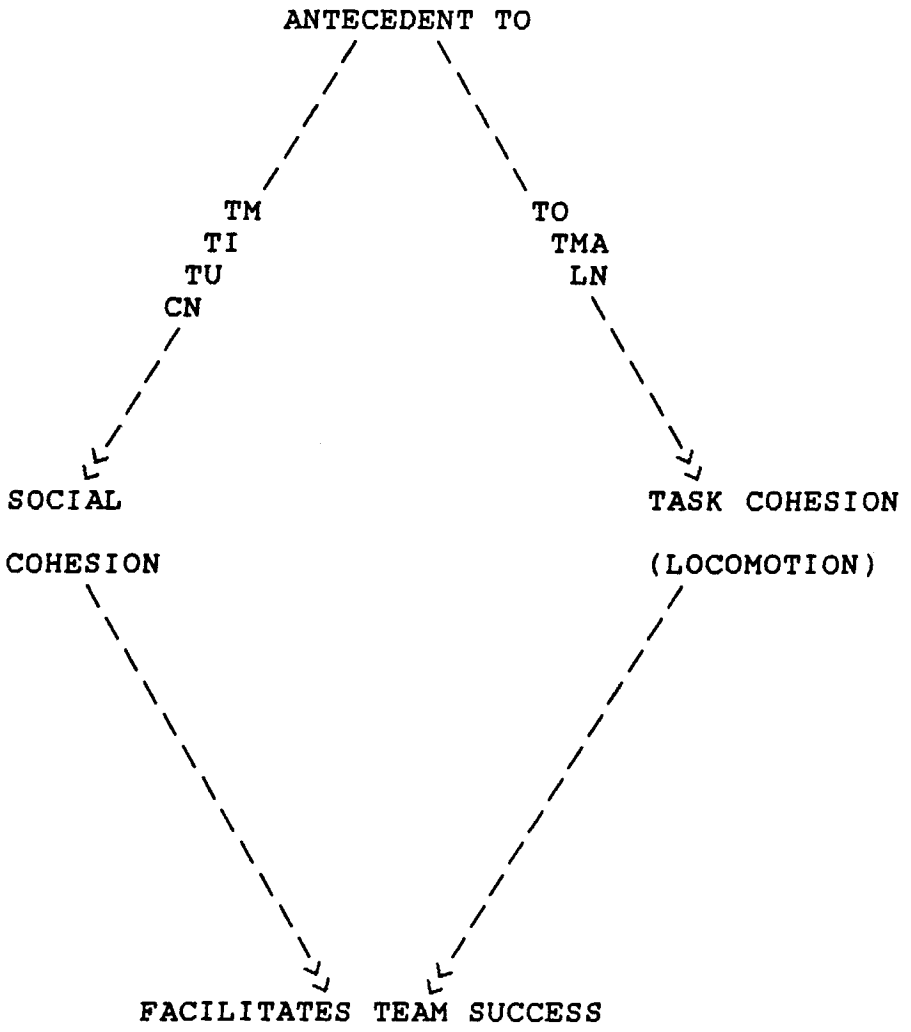


FIGURE A

Individual Characteristics: Antecedent To Cohesion, Locomotion, and Success

Training camps are not of a sufficient duration to enable coaches to come to know an athlete's psychological make-up to the extent that an accurate assessment of his-her attitude could be accomplished. There is no measurement tool which allows a coach or researcher to test whether a player is team-oriented or has more individualistic intentions. The team-based attitude inventory would not be used specifically for team selection purposes. However, it could have an important role in providing feedback to the coach, such that if a significant number of players are classified as "individualistic", the coach may arrange for a sport psychologist to speak to the team on the importance of cooperation and cohesion. In this way it serves as an educational process.

For The Researcher. A team-based attitude inventory would contribute to the body of sport psychology research, furthering the knowledge and understanding of individuals within a team and how these individuals affect group structure and processes. Various studies have attempted to examine differences between athletes and non-athletes (Hammer, 1967; Kane, 1967; Kumar, Pathak, & Thakur, 1985) and between athletes in a variety of sports (Cofer & Johnson, 1960; Peterson, Ukler, & Trousdale, 1967; Sage, 1972; Schurr, Ashley, & Joy, 1977). The team-based attitude inventory would possess the ability to differentiate between individuals within a team, specifically evaluating one's degree of team-based attitude. The theoretical orientation

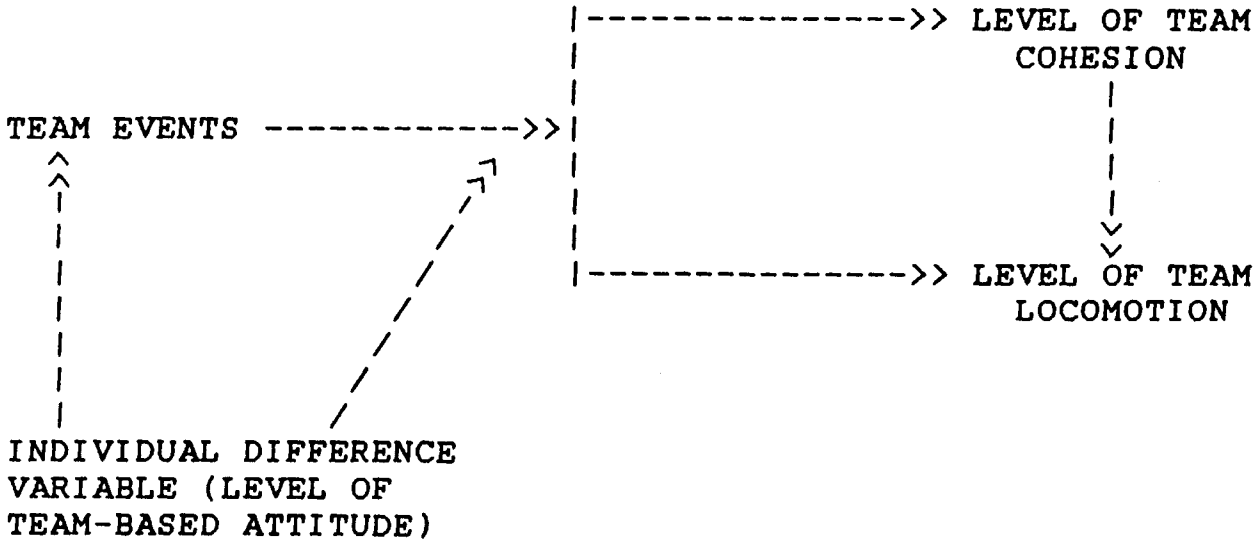


FIGURE B
Individual Difference Variable: A Moderator of Cohesion

within group dynamics is directed towards resolving what the basic variables are that determine what happens in groups. Individual characteristics influence group structures and patterns through interactive processes, affecting the behavioral properties of the group and ultimately the success of that group. Team-based attitude can be viewed as an individual difference variable which is a moderator on the level of group cohesion and locomotion within a team.

An inherent weakness with existing cohesion instruments is exactly what the instrument was designed to measure, and the resultant studies and inferences possible with such questionnaires. Past cohesion instruments and studies examining team dynamics and the cause-effect relationship between cohesion and performance have failed to consider how each individual affects the group, assessing only the athlete's perception of how cohesive his-her particular team is at that time. To more fully study team dynamics and identify possible antecedents and mediators of cohesion and locomotion, an improved instrument is required which will enable individual characteristics to be researched.

Brawley et al. (1988) stated that any leader hoping to foster group cohesion on his-her team could do so by selecting individual members with certain qualities, or by fostering certain conditions within the group. They also reported that the overwhelming majority of potentially disruptive factors were focussed on individual members rather than the team as awhole. It is the individual

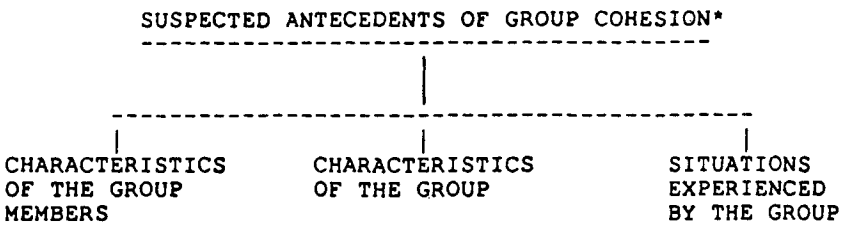


Figure C

Suspected Antecedents of Group Cohesion

* Brawley et al. (1988) used the term 'cohesion' to encompass both 'social cohesion' and 'task cohesion', components this investigator and early theorists termed 'cohesion' (social cohesion) and 'locomotion' (task cohesion).

deviating from the team's norms and goals which is disruptive to team preservation (Brawley et al., 1988; Festinger et al., 1950). Although individual characteristics have been identified as early as 1950 as an antecedent and consequence of group cohesion, no sport-specific measurement tool exists which identifies individual characteristics, differentiates between individual characteristics which facilitate cohesion and which detract from cohesion, and which examines how individual characteristics affect team dynamics and success.

Statement of Purpose

It has been acknowledged that the solution of team dynamics problems "requires both theoretical ingenuity and the invention of better methods of measurement" (Cartright & Zander, 1968, p. 107). The purpose of this present study, then, concerns the development of a valid and reliable team-orientation instrument which measures tendencies towards multidimensional team-based attitudes within interactive, interdependent elite sport groups.

Chapter II

Literature Review

Instrumentation

Review of Sport Cohesion Instruments

To this date sport cohesion and sport specific team attitude instruments have been developed and utilized to examine the cohesion-performance relationship. Equivocal research results have suggested that either cohesion leads to better performance (Bird, 1977b; Hartung, 1983; Landers et al., 1982; Widmeyer & Martens, 1978), or successful performance leads to increased cohesion (Ruder & Gill, 1982; Williams & Hacker, 1982), as well as a possible circular relationship (Martens & Peterson, 1971). Simultaneously, negative relationships (Landers & Lueschen, 1974) and neutral relationships (Melnick & Chemers, 1974) have also been reported.

Many of the inconsistencies in research results can be attributed to the main determinents of cohesiveness utilized in the early team dynamics research. The instruments used in such research efforts stressed 'friendship', 'interpersonal attraction', 'personal satisfaction', and 'enjoyment', while ignoring the importance of maintenance and unity around the team's goals, and the group processes towards achieving those goals. Thus early approaches to team cohesion were more likely appropriate for recreational levels of sport, but insufficient to reflect the task-oriented component in elite sport. This is evident in

research (Arnold & Straub, 1973; Gruber & Gray, 1981; Landers et al., 1982; Widmeyer & Gossett, 1978; Widmeyer & Martens, 1978) which examined intramural teams or teams composed of student volunteers.

The most common measurement tool (in the 1970's) utilized to assess team cohesion has been the Sports Cohesiveness Questionnaire (Martens et al., 1972). This inventory was based on the early definitions of cohesion. As a result it's components are mainly representative of the social cohesion aspect. The Sports Cohesiveness Questionnaire assesses friendship or interpersonal attraction, the influence or power of each member, value of membership, sense of belonging, degree of closeness within the team, and level of teamwork. With the exception of the teamwork measure, the Sports Cohesiveness Questionnaire reflects only social cohesion. In addition, a thorough psychometric analysis has never been completed to support the widely accepted use of the Sports Cohesiveness Questionnaire.

Recognizing the limitations of emphasizing predominately social cohesion components as the determinents of an aggregate, group property cohesion score, and realizing that it is the teamwork and closeness ('group as a unit') "measure which most consistently discriminate between successful and unsuccessful sport teams" (Carron & Chelladurai, 1981, p. 136), Carron defined cohesion as a "dynamic process which is reflected in the tendency for a

group to stick together and remain united in the pursuit of it's goals and objectives" (1982a, p. 105). In support of this new definition, Grand & Carron (1982) developed a Team Climate Questionnaire, which tapped both social and task cohesion. The psychometric properties of this measurement tool have been well established.

Yukelson, Weinburg, and Jackson also proposed that "operational measures based on attraction alone are conceptually inadequate to explain the multidimensional nature of cohesiveness in sport. Particularly critical in sport teams are the goals and objectives the group is striving to achieve as well as the functional interdependencies and normative constraints that impinge upon group members" (1982, p. 88). They then developed a valid and reliable four factor (Attraction to the Group, Quality of Teamwork, Unity of Purpose, and Valued Roles) sport cohesion instrument which reflects both task and social cohesion. The inventory is psychometrically sound, measures both the cohesion and locomotion components of team dynamics, and is theory based. However, it has yet only been applied specifically to intercollegiate basketball teams.

The Group Environment Questionnaire (Widmeyer et al., 1985) represents the cummulation of team dynamic research and is an extension and refinement of Grand and Carron's (1982) Team Climate Questionnaire. Widmeyer et al. (1985) used operational defintions and a theoretical basis to build

a conceptual model for a theory driven research approach, which provides the impetus for the development of their questionnaire items. The Group Environment Questionnaire has been tested across a variety of sports, skill levels, ages, and sexes. As a result norm tables have been established and generalizability is afforded. This instrument has four components: Group Integration-Task; Group Intergration-Social; Individual Attractions to the Group-Task; and Individual Attractions to the Group-Social. Together, these four components assess the "member's perceptions of the group as a totality and the member's personal attractions to the group" (Widmeyer et al., 1985, p. 15).

Causes, Effects, and Mediators

Research indicating a wide range of suspected antecedents of cohesion can be "placed into one of three categories: characteristics of the group members, characteristics of the group, and situations experienced by the group" (Widmeyer et al., 1985). Similarly, suspected consequences of group cohesion may be classified under consequences for the group members, consequences for the group, or consequences for group products.

Many variables may actually be listed as either causes or effects due to correlational analysis techniques which do not indicate causality. Moreover, it is difficult to ascertain antecedents and consequences because of the poor initial cohesion instruments and inconsistencies in research

design, methodology, and analysis. Additionally, cohesion instruments to date have examined how each player rates his or her team's current level of cohesion, and have attempted to interpret the cause-effect relationship between cohesion and performance with this measure.

Individual Characteristics - A New Direction, A New Inventory

The Group Environment Questionnaire, for example, attempts to measure the athlete's attraction to his-her current team only (that team during that season), and whether the athlete perceives his-her team to be cohesive and united at that time.

There are several problems with this approach. Athletes are unable to isolate their current participation from past experiences that over time have contributed to developing attitudes and values. Such cohesion instruments are incapable of defining cause-effect relationships. A time-constrained assessment of the team's level of cohesion as a whole does not examine what causes and mediators helped create that level of cohesion. The common cause which has been continually examined, although it has not been clearly distinquished as such through improved instruments or statistical design, is game outcome (success). Past studies and instruments have completely overlooked that individuals bring certain personal characteristics or attitudes to the team and the environment, and that these individual characteristics and attitudes mediate group processes and

affect the level of cohesion within a team. This investigator aims to develop a Team-Based Attitude Inventory to assess individual characteristics through personalized behavioral questions and non-personalized general value judgement questions. This may allow an improved examination of team dynamics and promote identification of antecedents and mediators which directly affect cohesion, locomotion, and performance.

Through the examination of relationships among several independent and dependent variables, the first step in developing an improved instrument and improved direction of research is the definition of a hypothetical model. This is a time consuming task, but if the model is defined very carefully, the chances of achieving a model with a good fit to the data and with meaningful parameters are much greater. Investing more time at this initial stage may therefore benefit the outcome of the study very much. Moreover, because the investigative emphasis is being moved away from the team's current status to the individual characteristics each athlete may bring to the team, a new model to support such an approach is critical. A review of the literature relating to the defined constructs and hypothesized relationships is absolutely necessary in order to define a valid model. This study concerns the construction of a new team dynamics instrument. It is not an empirical study examining game outcome, therefore the literature review to follow is specific to each hypothesized construct within the

Team-Based Attitude model.

Theoretical Background

A theoretical basis is required to build a conceptual model for a theory driven research approach. "The underlying theory concerning the construct provides the impetus for the development of the scales and their items" (Widmeyer et al., 1985, p. 13). Team-based attitude is a multidimensional construct consisting of several social-psychological subdomains; these are hypothesized to be team norms, team dynamics, and personality theory. Team norms consists of cohesive norms and locomotive norms. In the team-based attitude model, these constructs fit within team dynamics. Team dynamics is represented by two components: cohesion, as indicated by team maintenance, team identity, team unity, and cohesive norms; and locomotion, consisting of task-orientation, team motivation and aspirations, and locomotive norms. Personality theory encompasses team-based traits, team dynamics attitudes, and locus of control. The hypothesized model this thesis will examine includes only team dynamics (cohesion and locomotion) components. Personality theory is presently beyond the bounds of this investigation, however it may be drawn upon at some future point to further test the team-based attitude model. The proposed team-based attitude model is presented schematically in Diagram D, although all of the constructs may not necessarily be components of the derived measurement

tool.

Team Dynamics

Team dynamics is concerned with knowledge pertaining to the nature of groups, and refers to the processes and interrelations associated with team involvement. Two processes are predominant within team dynamics - cohesion and locomotion (Lewin, 1935). Cohesion represents group maintenance, while locomotion refers to the actions and processes of the group in striving toward achieving group goals. These two are interrelated and interdependent (Cattell, 1948), in that without group maintenance, working towards group objectives is not possible.

Cohesion

Festinger, Schachter, & Back defined cohesion as the "total field of forces which act on members to remain in a group" (1950, p. 164). Later, Gross and Martin (1952) identified cohesion as the resistance of the group to disruptive forces. Cartwright & Zander (1968) also perceived cohesion as the degree to which members desire to remain in a group (based on attractiveness of the group and attractiveness of alternative memberships).

One antecedent to sport cohesiveness is the individual characteristics of team members. This in turn contributes to team factors (team norms, team stability, desire for group success) which is another antecedent to cohesion.

Brawley, Carron, and Widmeyer (1988) reported that the overwhelming majority of potentially disruptive factors were focussed on individual members rather than the group as a whole. It is the individual (leaving the team, deviating from the team's norms) or individuals together forming a clique (subgroups apart from the whole group) which is potentially disruptive to the team's preservation (Brawley et al., 1988; Festinger et al., 1950).

As cohesion assists in holding the team together in pursuit of it's goals, and specifically contributes to coordination, researchers assume that cohesion can contribute to performance when completion of a task is dependent on the coordination and collaboration of members. Cohesion seems to be positively correlated to performance for interactive, interdependent sports (Ball & Carron, 1977; Carron, 1982; Carron & Chelladurai, 1981; Landers, Wilkinson, Hatfield, & Barber, 1982; Widmeyer, et. al, 1985; Widmeyer & Martens, 1978). Cohesion encompasses those processes conducive to team maintenance, team identity, team unity, and cohesive norms.

Team Maintenance. One subcomponent of cohesion within the team-based attitude model is team maintenance. Gross & Martin (1952) referred to a strong cohesive group as one which has resistance to disruptive forces, where individuals act to maintain a stable environment. Moreover, members who have sacrificed something of value for the group become more attracted to the group, and will behave so to facilitate

group preservation (Zander, 1982).

Team maintenance refers to group members supporting each other, and the willingness to stick together to maintain a stable environment. Team maintenance reflects beliefs and affective evaluations towards athlete loyalty, dependability, group preservation, and making sacrifices in lieu of the team to help preserve the team's structure.

Team Identity. A further cohesion subdomain which may be a contributor to team-based attitude theory development and provide test item content is team identity. Festinger, Schachter, and Back defined cohesion as the "total field of forces which act on members to remain in a group" (1950, p. 164). A member's desire to belong to and remain in a group increases the more members are attracted to the group, the more they value their membership (Zander, 1982), and the greater their pride in membership. Pride in one's group increases the desire for group success (Zander, 1985). Team identity reflect's one's desire to belong and remain in the group because of pride in membership and valuing membership.

Team Unity. Team-based athletes work within group solidarity, valuing the 'closeness' of the team. This is reflected in their belief of the importance of team harmony, morale, and team spirit. Team-based athletes believe that unity can improve when the team spends additional time together outside the sport environment. Indeed, group strength increases with homogeneity of members and harmony

between members. The more similar the members of a group, the more cohesive is that group (Zander, 1982). Homogeneity and cohesion are facilitated through proximity. A sense of group is fostered by events that produce additional interation: parties, social gatherings, and time spent together during daily activities (studying, travelling, et cetera). Familiarity breeds a cohesive group (Zander, 1982).

Locomotion

Locomotion is the second main process within team dynamics theory, and is defined by the actions and processes of the team in striving toward achieving team goals. By it's very definition locomotion is supportive of the need for question content examining team task attainment when assessing team-based attitude. It consists of task orientation, team motivation and aspirations, and locomotive norms. Locomotion has been examined within the realm of athletics as task cohesion (Carron, 1982; Grand & Carron, 1982; Hartung, 1983; Yukelson, Weinburg, & Jackson, 1984). Task cohesion reflects a perception of the team being united around it's goals and objectives, as well as a general orientation or motivation towards achieving the organization's goals and objectives (Widmeyer, et al., 1985).

Task Orientation. Locomotion was examined by Stogdill (1959, 1963, 1972) as group drive, representing the

intensity with which members invest expectation and energy for the group. Bass (1961, 1962) differentiated between self, interaction, and task-orientation based on a theory of interpersonal behavior in organizations. A task-oriented member tends to work within the group to make it as productive as possible (Bass, 1962). Task orientation refers to an athlete's tendency to direct his efforts towards achieving team goals and objectives, and a positive evaluation of the importance of those goals and objectives. It is desirable to have homogeneity of attitudes within the team to focus a heterogeneity of roles and skills to behavior which facilitates advancements to success for goals it was organized to achieve. "It is imperative that instruments developed to assess group cohesion in sport reflect factors associated with the goals and objectives the group is striving to achieve, as well as factors associated with the development and maintenance of positive interpersonal relationships" (Yukelson, et al., 1984, p. 106). This task component has more recently been accounted for in team dynamics research with a task cohesion factor (ie: Widmeyer, et al., 1985).

Team Motivation and Aspirations. Team motivation measures provide a further probable appropriate means for addressing team-based attitude. Achievement motivation is the inclination for direction towards competition with a standard of excellence to be controlled by it's connections to probable consequences. The desire for group success and

finding pride in this success is a group oriented motive (Carron, 1980, 1984). Group motivation and aspirations serve to direct behavior toward team accomplishments.

Zander (1985) delineated group-oriented motive and desire for group success as the disposition to be concerned about group achievement. "A greater desire for group success among members increases the strength of that body" (Zander, 1982, p. 9). Further, individual and group motives were noted as separate variables. When the group goal is the main incentive property for the group, the greater desire for group success increases the strength of that body (Zander, 1982). A desire for group success facilitates normative behavior, while members perform better, have more favorable attitudes towards the group, and support one another in the belief that group success is important (Zander, 1982).

Team Norms

Team norms refers to a limited set of behaviors, beliefs, or rules which promote specific uniformity to help the team maintain itself as a group and to help the team accomplish it's goals. These approved behaviors are also referred to as team standards, and are derived from influences which the team is able to exert over it's members (Festinger, Schachter, & Back, 1950). Norms within sport groups are most often overt and formalized by the coach, or well recognized and exemplified by veterans.

A person may behave in a manner similar to the rest of the group because others (coach, teammates) press him-her to act or think as they do, on the grounds that there are advantages for the team from uniformity in behavior (Cartwright & Zander, 1960). "The power of a group over it's members is directly proportional to the cohesiveness of that group. The relationship between cohesiveness and power holds regardless of whether attraction is based on personal attraction between members, on effective performance of the task, or on the prestige obtained from membership" (Back, 1951, cited in Cartwright & Zander, 1960). Members of a cohesive group more readily accept the group's goals, decisions, and assignment to tasks and roles.

The unit's rules, policies, norms, or required practices, designated as group standards, represent proper behavior so that the body can be viable and effective. When a group's standards are well accepted by members, each person knows how to act, what to anticipate from colleagues, and how he and his teammates can work together smoothly" (Zander, 1982, p. 8). Within the team-based attitude model, team norms consist of cohesive norms and locomotive norms, and are positioned within the cohesion and locomotion components of team dynamics.

Cohesive Norms

Cohesive norms include normative behaviors that are followed to ensure the team remains strong as a group.

"Some group standards may simply serve as a means for helping the group maintain itself" (Cartwright & Zander, 1960, p. 169). Cohesive norms are forces which serve to assure that the group will continue to exist as an entity. The power of a group is directly proportional to the cohesiveness of that group, regardless of whether cohesiveness is based on personal attraction between members, prestige obtained from membership, or group unity (Cartwright & Zander, 1960).

A team must remain united in order to pursue it's achievement goals. The members of a team can build the efficiency, effectiveness, and vitality of their unit by following normative practices that foster group strength. "In a strong group, the members recognize that they form a unit; they want to belong to that unit; and they instinctively provide whatever services the unit needs from them, working hard on it's behalf and conforming to it's demands" (Zander, 1982, p. 1). Athletes conform to team demands in their desire to resist disruptive forces on the group. They recognize that failure to comply to cohesive norms is a disruptive force in itself.

Locomotive Norms

Locomotive norms is yet another element of locomotion which may assist in developing a conceptual model for team-based attitude. Locomotive norms reflect intra-team cooperation and the willingness to follow team standards that exist to promote advancement towards team goals.

Lefebvre (1975) alluded to the importance of cooperation when differentiating between the 'joint gain motive' (cooperator), 'relative gain motive' (competitor), and 'own gain motive' (individualist). Intra-team cooperation is applicable to team-based attitude in that it is associated with the team's purpose and operational methodologies. "It is important to have each individual on the team committed to the values, operating procedures, and organizational philosophy by which the group is governed" (Yukelson et al., 1984, p 114).

For interdependent sports, cooperative motivations between athletes within a team may lead to higher performance (Butt, 1987). The actual sport competition requires "cooperating with one's peers and raising one's performance through group support, team cohesion, and group identity" (Butt, 1987, p. 57). Intra-team cooperation is a part of locomotion in that it reflects interdependent efforts towards goals. Van Egeren (1979) and Baron & Byrne (1984) identified people as competitors, cooperators, or individualists based on how they behave when interacting with others. When people cooperate, they often reach goals none could reach alone. This is regulated through locomotive norms.

Uniformity is considered desireable or necessary in order for the group to achieve it's goal. "Approved procedures for movement toward an agreed upon goal, then, often are the sources of pressures toward uniformity.

Members view these procedures as the proper way to behave since the methods are seen as assuring progress toward the goal" (Cartwright & Zander, 1960, p. 169). The more players value the condition the standard has been established to support, the more they believe that adherence to the standard will help achieve or maintain this condition (Zander, 1982), and the more they see the goals as attainable, the greater the power of a team over the behavior of a member (Cartwright & Zander, 1960).

The resultant uniformity promotes optimal productivity. "When a group effectively uses it's available resources to meet task demands, it's actual productivity or performance approaches it's potential" (Gill, 1986, p. 211). Sports requiring considerable interaction and cooperation are most susceptable to coordination losses, placing an emphasis on the need for standards of behavior and the willingness to conform so to optimize productivity.

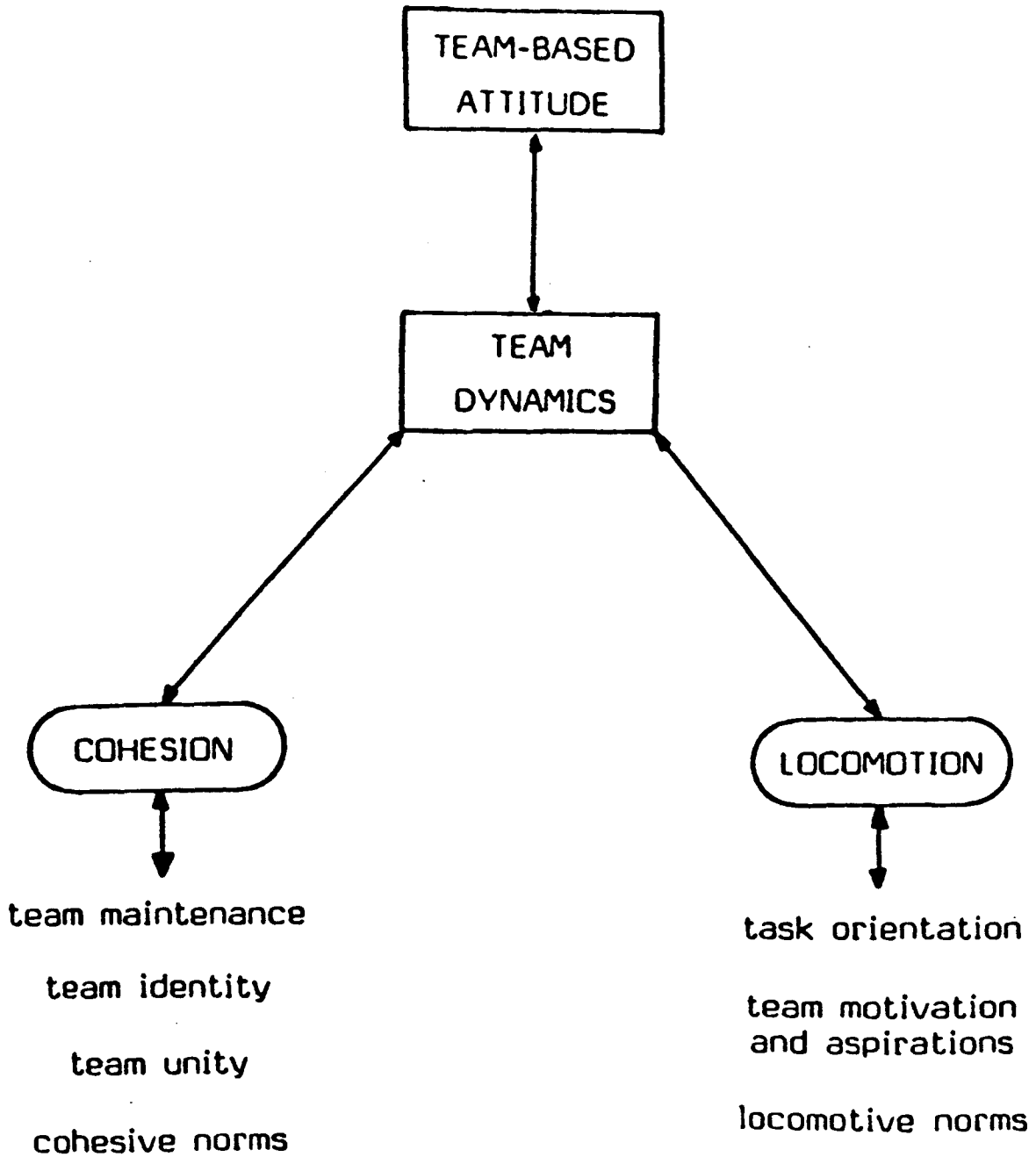


Figure D

Team-Based Attitude Model

CHAPTER III

Methods and Procedures

Inventory Construction

Item Development

Test Item Generation. Each main component (cohesion, locomotion, and group norms) has several sub-components which are highly inter-correlated, and measure their respective main component which contributes to assessing team-based attitude. An aggregate list of appropriate test items which are hypothesized to tap team-based attitude was developed from existing inventory content and original question content.

Based on existing inventory content, appropriate items were identified and adapted to reflect the Team-Based Attitude theory. Existing inventories resourced included the Team Climate Questionnaire (Carron & Grand, 1982), Gruber and Gray's (1981) thirteen cohesion items, the Family Environment Scale (Moos, 1974), the Group Environment Questionnaire (Carron et al., 1985), Survey of Athletic Experiences (Smith & Smoll, 1986), Yukelson's (et al., 1982) cohesion instrument for basketball teams, and the Sports Cohesiveness Questionnaire (Martens, et al., 1972). These inventories were selected because they were designed to measure important constructs within teams or groups, social cohesion, and task cohesion. Original test items were

constructed based on the theory behind Team-Based Attitude and the literature supporting the hypothesized components within Team-Based Attitude. Additionally, a systematic gathering of question content was achieved by obtaining input through structured interviews with five coaching experts (university or provincial level) and six elite athletes (university or national level). Throughout item construction and adaptation, efforts were made to keep questions brief, with simple wording (Converse & Presser, 1986). The vocabulary chosen was based on easy comprehension by the athletes who would be completing the inventory. This methodology resulted in a large (102 items) initial item pool (see appendix A).

Operational Definitions. Based on the theory supporting each construct, succinct operational definitions were developed, along with key words or phrases.

F1 - Team Maintenance :

- Refers to team members supporting each other, and the willingness to stick together to maintain a stable environment.

- Preserving the team's structure.

- Loyalty, sacrifice, stability, preservation and support, dependability, sticking together.

F2 - Team Identity :

- Reflects one's desire to belong and remain in a group because of pride in membership and valuing membership.

- Attraction to the group.

F3 - Team Unity :

- Team harmony, morale, and team spirit.

- "Social" cohesion.

- Based on the hypothesis that unity increases the more time athletes spend together outside the sports environment.

- Facilitated through proximity (familiarity breeds a cohesive group).

F4 - Cohesive Norms :

- Normative behaviors enforced and followed which ensure the team remains strong as a group.

- The willingness and desire to comply to norms which facilitate cohesion.

- Conforming to behavior requested to facilitate team maintenance, team identity, and team unity.

F5 - Task Orientation :

- An athlete's tendancy to direct his-her efforts towards achieving team goals and objectives.

- Positive evaluation of the importance of the team's goals and objectives.

F6 - Team Motivation and Aspirations :

- Team motivation and aspirations serve to direct behavior toward team accomplishments, through the desire for team success and finding pride in this success.

- The team's goal is the main incentive property for participation.

Locomotive Norms :

- Normative behavior enforced and followed which ensures intra-team cooperation.

- The willingness to follow team standards and procedures which promote advancement toward team goals.

Matching Items and Constructs. Based on the operational definitions, the initial item pool was examined to match each item with the construct it best represents (see appendix A). This was done by the investigator based on question content, assessing the question 'meaning' and grouping items of similar content to the construct with the theoretical definition that matches the item content.

Item Examination By Athletes. Ten elite athletes (university varsity level) examined each individual item. They were asked to read each individual item, and respond to the question "what is the meaning of this statement?". The investigator guided athletes (one athlete at a time) through the 102 items, to ensure each item was properly attended to, and to facilitate feedback on each item. Obtaining athletes perceptions of the meaning of each item resulted in the elimination of 29 poorly worded items, and refinement of each of the 73 remaining items to reduce ambiguity.

Item Validation By Expert Opinion. Items for each component were listed (see appendix B) for a panel of five experts from the fields of sport psychology and coaching. Operational definitions for each component were provided.

Each item was rated by these experts on a five-point Likert scale, indicating the degree they agreed each item fit within the appointed component. Items consistently rated (by the five expert judges) not appropriate for the appointed component were subjected to further analysis whereby judges sorted these items into the components (if any) they thought were appropriate. This helped improved the item to factor model based on a theoretical basis, and exposed items judges concluded did not fit within any of the defined components. These expert judges also provided feedback on items that were incorrectly worded, ambiguous, or did not represent the Team-Based Attitude theoretical basis. This resulted in the deletion of nine items. The examined and reduced items, under their appropriate construct, made up the original 64 item Team-Based Attitude Inventory (see appendix C).

Item Ordering and Scaling. Items from each construct were alternated, such that two items from one construct were never positioned in succession. Eleven items were negatively worded to allow for an honesty test and a social desirability check against other positively worded items taping the same construct.

A seven point Likert scale was developed for scoring each item . Personalized, behavioral items (e.g., Q52, Appendix C, p. 110) were anchored by "Very Rarely" and "Very Frequently", while non-personalized, value judgement items (e.g., Q54, Appendix C, p. 110) were anchored by

"Strongly Disagree" and "Strongly Agree".

Data Collection: Phase A Inventory Development

The target group was defined as male varsity athletes from basketball, hockey, volleyball, and rugby teams within the Canada West University Athletic Association. The selection of this population was based on the type of sport (interactive, interdependent team sports) and timing of season. A subject pool of athletes similar in age, sex, performance level, and demographics was desired for initial validation purposes. Future analysis can examine female athletes, different sports, ages, and ability levels for further validation testing.

The University of British Columbia Office of Research Service's ethics committee was provided with appropriate information and documentation for an ethical review of the proposed study. The "Behavioural Sciences Screening Committee for Research and Other Studies Involving Human Subjects" reviewed the protocol and issued a Certificate of Approval for commencement of the research. Nineteen coaches from six universities within the Canada West University Athletic Association were then contacted by letter to obtain their consent to include their team in the study. Letters stated the purpose of the study, the time involvement required from the athletes, sample questions from the TBA Inventory, and a consent form, (see appendix D) along with a pre-stamped envelope bearing the name and address of the investigator. A representative within each school's

Physical Education Department was then contacted to administer the inventory to the seventeen teams whose coach had consented to their participation in the study (see appendix E). TBA Inventories (N=355) were distributed to the representatives, with the request that they be administered, collected, and returned. Each representative was provided with instructions (each representative received the exact same instructions), inventories, and a prestamped box bearing the address of the investigator with which to return the completed inventories (see appendix F).

Table 3.1

Inventory Distribution by School and Sport

	Sport			
School	Hockey	Volleyball	Basketball	Rugby
University of B.C.	25	15	15	40
University of Calgary	25	15	--	--
University of Alberta	25	15	15	--
University of Victoria	--	15	15	40
University of Saskatchewan	25	15	15	--
Lethbridge University	25	--	15	--
Total	125	75	75	80

The cover letter which accompanied each inventory comprised a brief description of the study, the purpose of the study, and the proposed benefits derived from the athlete's assistance. It also listed instructions for completion of the inventory, and included an informed

consent form (for the athlete to sign), with assurance that all data would be kept strictly confidential. The inventory consisted of two sections. Section one pertained to demographic information and sport background. This was followed by the 64 Team-Based Attitude items (refer to Appendix C for the cover letter, section 1, and section 2 of the Team-Based Attitude Inventory).

Data Collection: Phase B Validity & Reliability Studies

Validity. Individual athletes (N=53) from the University of British Columbia were asked to complete the Team-Based Attitude Inventory to provide data for a known groups difference test. A convenience sample of individual ahletes were pre-screened by the investigator and 53 subjects were selected based on their minimum of 80 per cent individual sport background. A representative

Table 3.2

Inventory Distribution to Individual

Athletes by Sport

Sport	N
Swimming	16
Track & Field	14
Golf	6
Cross Country	5
Gymnastics	4
Tennis	3
Martial Arts	2
Skiing	1
Raquetball	1
Badminton	1
Total	53

independent from their sporting team administered and collected the TBA Inventory. The athletes received identical instructions, cover letter, consent form and the TBA Inventory. The individual athlete scores were collected to compare with the team athlete scores (University of British Columbia team athletes from Phase A (N=53)).

Coaches at each university involved in the testing were sent a cover letter asking them to rate each veteran (players in their second year or more with that coach) player's level of cohesion and level of locomotion on a scale of 1 to 10. (see appendix G). Coaches ratings would be compared to the athlete responses to provide a source of external validation.

Reliability (Stability). University of of British Columbia team athletes (N=52) completed the TBA Inventory a second time three to four weeks following their initial testing. This provided data for a test-retest reliability analysis.

Data Analysis

Item Deletion and Inventory Revision

The TBA model consists of several latent variables, which are abstract concepts that cannot be measured directly. Observed items, or manifest variables, are hypothesized, based on theoretical grounds, to measure abstract concepts, or latent variables. These latent variables in turn are hypothesized to measure TBA. The

hypothesized factor structure was tested in Phase A by applying Confirmatory Factor Analysis (CFA). This test of the measurement model attempts to establish the validity of the factor pattern, indicating how well the manifest variables measure the latent variables. Lisrel VI CFA was run to assess the goodness of fit of the hypothesized factor pattern.

A BMDP:2D descriptive analysis, SPSS:X reliability, and two Exploratory Factor Analysis (EFA) runs were also completed to help assess the TBA model. EFA entailed a principal components solution with varimax rotation. The maximum number of factors was set at ten. A second EFA entailed a maximum likelihood factor analysis with direct quartimin rotation. The maximum number of factors was also set at ten. The criteria for assessing overall fit is explained in this chapter, while table 4.4 lists the initial criteria examined in assessing the hypothesized factor structure. The steps followed for data preparation, item deletion, and inventory revision are outlined below.

Data Coding and Rescoring

Negatively worded items (Q3, Q6, Q7, Q20, Q34, Q36, Q40, Q41, Q48, Q50, Q53) were rescaled within the data file. Missing data, 14 items in total (no one subject was missing more than one item), were entered by computing the subject mean score for each scale. This allowed for a correlation matrix based on complete data, thus avoiding deletion of subjects or the problems inherent in a pairwise deletion

procedure. A BMDP:2D descriptive analysis was run to examine the distributional characteristics of the data. The mean, standard deviation, and skewness were computed for each item.

Reliability (Internal Consistency)

SPSS:X Reliability was run to examine the item-scale correlation, internal consistency of each scale (Cronbach's alpha), and item-item correlations. The item-scale correlations provided information suggest which items should be retained or deleted under each component. Cronbach's alpha indicated the degree to which all items in a scale measured the same underlying construct. If the "alpha if item deleted" indicated that alpha would increase if an item was deleted (from that factor), other analysis were examined (ie: CFA) to seek confirmation that the deletion did not belong.

Factor Structure - Criteria For Assessment of Overall Fit

A confirmatory factor analysis (CFA) was used to test the validity of the allocation of items to constructs, and provide a test of the "goodness of fit" of the proposed seven factor model. The confirmatory factor analysis was conducted through the application of the program Lisrel VI (Joreskog & Sorbrom, 1984), and produced a goodness of fit index for the data-model fit as well as numerous statistics to aid in modifying the inventory or the model (factor loadings, chi-square, goodness of fit index, root mean square residual, modification indices, normalized residuals,

and t-values). Within CFA observed variables are allowed to load only on the factors they are hypothesized to measure. There is no limit to the number of measures per latent variable, but each additional manifest variable adds less and less variance therefore less information with respect to the unmeasured variable (Haig, 1989). At least five or six items are usually needed to reliably measure a factor. Five indicators per factor was set as a preferred limit for the TBA Inventory, partially taking into account the time required to complete the inventory. In assessing the overall fit, one may evaluate factor loadings, chi-square, goodness of fit index, root mean square residual, normalized residuals, modification indices (of all non estimated paramters), and t-values (of all estimated parameters).

Factor Loadings. BMDP and SPSS replace loadings less than .250 with zero. An item with a loading of .500 explains .25 per cent of the variance. In assessing the TBA Inventory, the minimum loading for inclusion was set at .400, in an effort to set strict standards and increase the validity and reliabilty.

Chi-square. Chi-square is represented by X2, degrees of freedom by df. The ratio of chi-square to df (Q) is often used to assess a relative measure of fit. In general, a lower Q corresponds to a better fit of the model. Suggested standards for an acceptable fit range from 2.0 to

as high as 5.0 In testing the TBA model, only values less than 2.0 would be accepted. A chi-square to df (Q) difference test assesses whether an improved fit to the data has has been achieved as a result of the addition or deletion of items or factors. If the reduction in chi-square is large (and statistically significant) relative to the associated difference in df, the new model may be accepted as a model that fits the data better. If the chi-square is small and nonsignificant the revised model is accepted as being equally valid to the original model.

Goodness of Fit Index. GFI ranges from zero to 1.0, and represents the relative amount of variances and covariances jointly accounted for by the model. GFI is not sensitive to sample size (unlike chi-square), and is robust against departures from multivariate normality. A value above .80 is generally accepted as a good fit, .90 is a very good fit.

Root Mean Square Residual. RMSR represents the average residual (the difference between the actual and estimated correlations) variance and covariance. A RMSR below 0.1 is usually considered to indicate an acceptable fit, below .05 is a very good fit.

Modification Indices. A high modification index (relative to modification indices for other manifest variables) generally indicates a constrained parameter that should be relaxed. The modification indices indicates the

minimum amount chi-square would be reduced if that parameter was allowed to also load on that factor. If one variable has several high modification indices, inclusion in the model should be re-evaluated.

Normalized Residuals. NR are raw residuals standardized by their estimated asymptotic variance. Joreskog & Sorbom (1984) suggests that NR that are larger than 2.0 in magnitude indicate a possible specification error. NR that are more than 2.0 indicate the need to examine that problem item closer.

T-values. Lisrel provides a "T-value" for each estimated parameter, which is actually a standard normal statistic (z-value), representing the ratio of the parameter and it's standard error. Parameters, factor loadings in this study, should be significant ($t > 2.0$) for all retained items.

Item Deletion Criteria

Progressive item deletions based on distributional characteristics, item analysis, and CFA produced revised inventories which were subject to further examination. Exploratory factor analysis suggested which items may load on another factor. A reassignment of any item to another factor was done only if there was both strong empirical and theoretical support. The content of items with poor results was also re-examined to see if inclusion with another factor

was theoretically probable.

Any decision with respect to deleting items or redefining the TBA model based on the above criteria has to also be profoundly based on theoretical considerations. If an item is deleted, its exclusion from the construct and the model has to be justifiable based on item content, the construct's operational definition, and model theory. If an item is to be moved to a new factor (construct), it has to be interpretable in terms of the new construct and the theoretical model.

Validity and Reliabilty (Stability)

Phase B of the data analysis examined construct validity and reliability. A known groups difference test was established to measure criterion related validity. University of British Columbia athletes were tested to differentiate between team and individual sport athletes. The BMDP:3D program was utilized to run an independent groups Hotelling's T2 test to test the hypothesis that team athletes would score higher than individual athletes on all seven TBA scales.

Concurrent validity was examined by measuring the coach's observations against the athlete inventory results. Correlations were used to examine the relationship between coach ratings and athlete scoring.

A test-retest procedure examined reliability, to give an indication of stabilty. An SPSS:X paired (correlated) t-

test was run for each factor, the second order factors of cohesion and locomotion, and a team-based attitude total score to test for any change in mean values. Test-retest correlations for each factor provided a measure of reliability over time.

CHAPTER IV

Results and Discussion

Questionnaire Return: Phase A Inventory Development

Eleven of the nineteen coaches initially approached consented to their team's participation in the study and returned completed inventories. Of the 355 TBA Inventories distributed to six universities within the Canada West University Athletic Association, 153 complete and useable inventories were returned, representing a 43.1 per cent response rate. Completed inventories were received from five universities (University of British Columbia, University of Calgary, University of Alberta, University of Saskatchewan, and Lethbridge University), representing four sports, hockey (N=74), basketball (N=32), volleyball (N=38), and rugby (N=9). Tables 3.1, 4.1 and 4.2 provide distribution information and response rate by school and by sport.

The mean subject age was 21.1 years (s=2.0). With respect to their sport history, the 153 respondents had a mean of 80.5 per cent involvement in team sports. Subjects had a mean 2.2 years (s=1.3) involvement on their current team, and a mean of 11.8 years (s=4.6) participation in that sport.

Table 4.1

Distribution and Response Rate by Sport

Sport Group	Inventories Distributed	Complete & Useable Inventories Returned	Response Rate
Hockey	125	74	59.2 %
Volleyball	75	38	50.7 %
Basketball	75	32	42.7 %
Rugby	80	09	11.3 %
Total	355	153	43.1 %

Table 4.2

Distribution and Response Rate by School

School	Inventories Distributed	Inventories Returned				Total Returns	Response Rate
		Hockey	V-ball	B-ball	Rugby		
UBC	95	16	17	11	09	53	55.8 %
U of C	40	16	10	n/a	n/a	26	60.0 %
U of A	55	17	--	09	n/a	26	47.3 %
U of V	70	--	--	--	--	--	0.0 %
U of S	55	--	11	--	n/a	11	20.0 %
Leth U	40	25	n/a	12	n/a	37	92.5 %
Total	355	74	38	32	09	153	43.1 %

Table 4.3

Descriptive Statistics For All 64 Items (N= 153)

Factor	Item	$\bar{X}$	S	Skew
F1 - TM	Q1	6.19	1.42	-2.52
	Q8	6.39	0.69	-0.70
	Q15	6.38	0.77	-1.03
	Q22	4.97	1.60	-0.59
	Q29	3.75	2.00	0.23
	Q36	5.00	1.88	-0.60
	Q43	5.54	1.36	-1.24
	Q50	6.08	1.19	-1.67
	Q57	5.97	1.08	-1.34
F2 - TI	Q2	5.71	1.15	-1.12
	Q9	6.13	0.88	-1.16
	Q16	6.28	0.80	-1.17
	Q23	5.92	0.90	-0.48
	Q30	6.26	0.79	-1.36
	Q37	5.26	1.54	-0.75
	Q44	5.41	1.41	-0.98
	Q51	6.03	1.07	-1.53
F3 - TU	Q3	5.05	1.45	-0.28
	Q10	6.11	0.90	-0.85
	Q17	5.56	1.48	-1.00
	Q24	6.00	1.24	-1.19
	Q31	5.18	1.37	-0.73
	Q38	5.58	1.28	-1.08
	Q45	6.37	0.74	-0.90
	Q52	5.24	1.26	-0.71
	Q58	3.73	1.70	-0.09
	Q61	5.10	1.35	-0.30
	Q63	5.27	1.27	-0.90
F4 - CN	Q4	6.09	1.10	-1.38
	Q11	5.83	1.07	-1.06
	Q18	5.60	1.24	-1.30
	Q25	5.80	1.03	-1.03
	Q32	5.88	1.11	-1.51
	Q39	4.83	1.75	-0.59
	Q46	5.68	1.19	-1.27
	Q53	4.24	1.44	-0.01
	Q59	5.55	1.01	-0.52

Table 4.3

Descriptive Statistics For All 64 Items (N= 153)

Factor	Item	$\bar{X}$	S	Skew
F5 - TO	Q5	6.18	0.97	-1.31
	Q12	6.03	0.96	-1.78
	Q19	6.24	0.74	-0.61
	Q26	5.54	1.19	-0.78
	Q33	5.72	1.34	-1.56
	Q40	4.98	1.39	-0.28
	Q47	5.52	1.21	-1.02
	Q54	6.18	0.83	-0.77
F6- TMA	Q6	4.20	1.87	-0.24
	Q13	5.26	1.34	-0.85
	Q20	4.65	1.53	-0.45
	Q27	5.35	1.28	-0.83
	Q34	4.37	1.43	-0.02
	Q41	4.34	1.59	-0.07
	Q48	4.92	1.55	-0.46
	Q55	4.76	1.71	-0.53
F7 - LN	Q7	5.74	1.49	-1.31
	Q14	5.44	1.38	-0.81
	Q21	4.96	1.39	-0.75
	Q28	6.45	0.88	-2.58
	Q35	5.28	1.33	-0.98
	Q42	5.50	1.27	-1.28
	Q49	5.73	1.04	-1.16
	Q56	4.83	1.60	-0.34
	Q60	5.78	0.94	-0.54
	Q62	6.00	0.88	-0.63
	Q64	5.90	1.23	-1.55

Descriptive Statistics

Table 4.3 presents the descriptive statistics of the data collected for Phase A testing (N=153), including means, standard deviations, and skewness. The relatively large skew observed for many of the items was not unexpected. It was anticipated that on some items the mean response would approach the ceiling value on the 7-point scale, thus causing a negative skew. It is these tail-of-the-distribution values which are most likely to discriminate between individual and team-based athletes.

Assessment of Overall Fit

Item Deletion and Inventory Revision

If loading of an item on a factor is NOT supported by Lambda X Maximum Likelihood Lisrel Estimates, CFA non-significant t values and internal consistency (item-scale r), AND no strong evidence exists of that loading elsewhere (CFA - modification indices; EFA - high loadings on another factor(s); item content theory), then that item may be deleted. Initially no more than three items per factor would be deleted or moved before analyzing a new revised inventory through further reliability, CFA, and EFA runs.

Table 4.4

Summary of Initial Criteria Examined For Item Deletion and Inventory Revision

BMDP:2D	SPSS:X Reliability	Lisrel VI CFA	EFA	Item Content
skewness	item-total correlation	non-significant t-values	rotated factor loadings	theory
standard deviation	alpha if item deleted (internal consistency)	modification indices		
mean		factor loadings		

Examples of the Item Deletion and Inventory Revision Process

The original 64 item inventory was reduced to a 35-item inventory through a series of analyses, interpretations, item deletions, and further analyses. There are many different situations which led to item deletion. Following are brief descriptions of five specific situations.

Example 1 - Deletion of Item 29 From TM (F1). Item 29 had the lowest item-total correlation within factor 1, and its deletion improved alpha from .427 to .483. The t-value was non-significant (-0.690), and modification indices did not indicate chi-square would be substantially lowered by allowing item 29 to load on other factors. In both PCA and MLFA EFA, item 29 did not load on any of the seven factors. Re-examining the question content, item 29 was not

consistent with the factor's content of 'sticking together' and 'loyalty to the team'. The maximum likelihood lambda X loading was only -0.057. After considering the above analysis, item 29 was deleted.

Example 2 - Deletion of Item 22 From TM (F1). Deletion of item 22 would improve alpha from .549 to .599. Within CFA, item 22 had a significant t-value, but it was low relative to the other items in that factor. It had the lowest factor loading (.263), while it did not load on any factors in MLFA EFA. Item 22 did load when PCA EFA was run, but there was no consistency in the item content for that factor grouping, therefore there was no theoretical justification to retain it and produce a new factor. After considering the above, item 22 was deleted.

Example 3 - Item 4 Deleted From CN (F4) and Moved To TU (F3). Item 4 had a low factor loading (.229) within CFA. It had a poor item-total correlation (r=.141), and if deleted from Factor 4, alpha would improve from .665 to .677. Modification Indices indicated, if item 4 was relaxed and allowed to load on any factor, that item 4 could also load on TI (Factor 2) and TU (Factor 3). Chi-square could be significantly reduced if item 4 was allowed to load on TI or TU. Item 4 also had a non-significant t-value. Both PCA and MLFA EFA produced a factor pattern with item 4 loading with the TU items. Upon examining the question content for item 4, it made greater theoretical sense to include item 4

with TU. The content of item 4 emphasizes 'socializing with teammates outside of the sports environment', which fits in with the operational definition for TU. Item 4 was therefore deleted from CN and moved to TU.

Example 4 - Deletion of Item 17 From TU (F3). Item 17 had five normalized residuals over 2.0, demanding a closer examination of this problem variable. X-KSI indicated strong loading on both TU and TI, and partial loading on three other factors. EFA (PCA) loaded item 17 on both TU and TI, while EFA (MLFA) loaded item 17 on TU and four other factors as well. Item 17 had high modification indices on TM, TI, CN, and LN. Based on the above, item 17 was deleted.

Example 5 - Item 10 Deleted From TU (F3) and Moved to TM (F1). TU is a fairly strong factor, with no loadings below .400 and an alpha of .769. However, the investigator desires to lower the number of manifest variables measuring TU, and item 10 has the lowest CFA lambda X loading (.422). Within EFA (MLFA), item 10 does not load on any factor, and EFA (PCA) results in item 10 loading with various items, with no theoretical consistency in question content. Item 10 has the lowest item-total correlation (r=.342). If item 10 was deleted from TU, alpha would be slightly lowered (.769 to .764), but including item 10 within TM would raise alpha (for TM) from .599 to .619, and removal of item 10 from TU lowers alpha less than removal of any other item

from TU. The modification indices also suggest that item 10 can load on TM. Examination of the question content shows that item 10 is not only about 'socializing' (as is TU), but also about 'becoming stronger as a unit', which fits within TM. Maintaining the group strong as a unit is precisely the theoretical basis for TM. Therefore item 10 was deleted from TU and moved to TM.

Summary of Item Deletions and Inventory Revisions

Table 4.5 presents all factor loadings and deletions throughout 5 inventory revisions. Each successive revision was subjected to further CFA, reliability analysis, and EFA. These statistical analyses provided the criteria (listed in table 4.4) on which further inventory revisions were based. The original 64 item inventory, revision 1, and revision 2 were all analyzed based on the criteria in table 4.4 and with the methodology detailed in the preceding 5 examples of the deletion and revision process. Revision 3 and revision 4 also examined normalized residuals to aid in further inventory refinement. Revision 5 provides a 35-item TBA inventory, with 5 items per factor. Factor loadings were strong, with only 3 of 35 items loading under .470. The lowest loading (Q1) was .379. The loadings, along with significant t-values, provide good initial support for the hypothesized factor model.

Table 4.5

SUMMARY OF ITEM DELETIONS AND INVENTORY REVISIONS

ORIGINAL 64 ITEM TBA INVENTORY				REVISION 1 - 56 ITEMS			
FACTOR	ITEM	LOADING	DECISIONS	FACTOR	ITEM	LOADING	DECISIONS
F1 - TM	Q1	.377		F1 - TM	Q1	.377	
	Q8	.619			Q8	.614	
	Q15	.519			Q15	.528	
	Q22	.292			Q22	.290	
	Q29	-.062	DELETE				
	Q36	-.093			Q36	-.085	DELETE
	Q43	.342			Q43	.341	
	Q50	.491			Q50	.492	
	Q57	.280			Q57	.277	
F2 - TI	Q2	.575		F2 - TI	Q2	.608	
	Q9	.675			Q9	.695	
	Q16	.671			Q16	.668	
	Q23	.671			Q23	.663	
	Q30	.690			Q30	.668	
	Q37	.132	DELETE				
	Q44	.452			Q44	.443	DELETE
	Q51	.507			Q51	.491	
F3 - TU	Q3	.381		F3 - TU	Q3	.454	
	Q10	.505			Q10	.470	
	Q17	.708			Q17	.637	
	Q24	.288	DELETE				
	Q31	.527			Q31	.581	
	Q38	.436			Q38	.535	
	Q45	.435			Q45	.390	DELETE
	Q52	.519			Q52	.524	
	Q58	.269	DELETE				
	Q61	.401			Q61	.443	
	Q63	.228			Q63	.240	DELETE
					Q4	.697	
F4 - CN	Q4	.229	MOVE TO TU	F4 - CN			
	Q11	.718			Q11	.717	
	Q18	.730			Q18	.734	
	Q25	.612			Q25	.611	
	Q32	.569			Q32	.575	
	Q39	.279			Q39	.281	
	Q46	.471			Q46	.479	
	Q53	-.089	DELETE				
	Q59	.768			Q59	.770	
F5 - TO	Q5	.494		F5 - TO	Q5	.500	
	Q12	.610			Q12	.617	
	Q19	.700			Q19	.705	
	Q26	.616			Q26	.623	
	Q33	.405			Q33	.401	
	Q40	.283	MOVE TO TMA				
	Q47	.643			Q47	.642	
	Q54	.592			Q54	.586	
F6 - TMA	Q6	.509		F6 - TMA	Q6	.525	
	Q13	.081	DELETE				
	Q20	.726			Q20	.718	
	Q27	-.019	DELETE				
	Q34	.610			Q34	.584	
	Q41	.604			Q41	.644	
	Q48	.655			Q48	.646	
	Q55	.059	DELETE				
					Q40	.663	
F7 - LN	Q7	.245		F7 - LN	Q7	.245	
	Q14	.458			Q14	.450	
	Q21	.310			Q21	.312	
	Q28	.488			Q28	.493	
	Q35	.393			Q35	.390	
	Q42	.427			Q42	.424	
	Q49	.618			Q49	.621	
	Q56	.470			Q56	.474	
	Q60	.238			Q60	.237	DELETE
	Q62	.487			Q62	.489	
	Q64	.238			Q64	.234	DELETE

Table 4.5

SUMMARY OF ITEM DELETIONS AND INVENTORY REVISIONS

REVISION 2 - 50 ITEMS				REVISION 3 - 46 ITEMS			
FACTOR	ITEM	LOADING	DECISIONS	FACTOR	ITEM	LOADING	DECISIONS
F1 - TM	Q1	.373		F1 - TM	Q1	.386	
	Q8	.607			Q8	.626	
	Q15	.543			Q15	.531	
	Q22	.301	DELETE				
	Q43	.351			Q43	.352	
	Q50	.471			Q50	.504	
	Q57	.272			Q57	.312	DELETE
					Q10	.425	
F2 - TI	Q2	.615		F2 - TI	Q2	.615	
	Q9	.696			Q9	.697	
	Q16	.668			Q16	.667	
	Q23	.661			Q23	.661	
	Q30	.651			Q30	.653	
	Q51	.481			Q51	.477	DELETE
F3 - TU	Q3	.483		F3 - TU	Q3	.518	
	Q10	.430	MOVE TO TM				
	Q17	.628			Q17	.611	DELETE
	Q31	.598			Q31	.626	
	Q38	.572			Q38	.591	
	Q52	.519			Q52	.506	
	Q61	.442			Q61	.428	DELETE
	Q4	.708			Q4	.705	
F4 - CN	Q11	.698		F4 - CN	Q11	.678	
	Q18	.724			Q18	.727	
	Q25	.671			Q25	.648	
	Q32	.564			Q32	.558	
	Q39	.284	DELETE				
	Q46	.474			Q46	.447	DELETE
	Q59	.756			Q59	.781	
F5 - TO	Q5	.499		F5 - TO	Q5	.514	
	Q12	.613			Q12	.651	
	Q19	.702			Q19	.722	
	Q26	.624			Q26	.589	
	Q33	.403	DELETE				
	Q47	.647			Q47	.612	
	Q54	.598			Q54	.598	
F6 - TMA	Q6	.525		F6 - TMA	Q6	.524	DELETE
	Q20	.719			Q20	.715	
	Q34	.583			Q34	.592	
	Q41	.645			Q41	.657	
	Q48	.645			Q48	.634	
	Q40	.664			Q40	.661	
F7 - LN	Q7	.243	DELETE	F7 - LN			
	Q14	.444			Q14	.431	DELETE
	Q21	.323			Q21	.385	
	Q28	.503			Q28	.470	
	Q35	.389			Q35	.369	DELETE
	Q42	.429			Q42	.419	
	Q49	.630			Q49	.686	
	Q56	.488			Q56	.447	
	Q62	.473			Q62	.479	

Table 4.5

SUMMARY OF ITEM DELETIONS AND INVENTORY REVISIONS

REVISION 4 - 38 ITEMS				REVISION 5 - 35 ITEMS		
FACTOR	ITEM	LOADING	DECISIONS	FACTOR	ITEM	LOADING
F1 - TM	Q1	.380		F1 - TM	Q1	.379
	Q8	.621			Q8	.623
	Q15	.541			Q15	.545
	Q43	.336	DELETE			
	Q50	.485			Q50	.475
	Q10	.433			Q10	.450
F2 - TI	Q2	.647		F2 - TI	Q2	.645
	Q9	.723			Q9	.722
	Q16	.650			Q16	.656
	Q23	.643			Q23	.641
	Q30	.606			Q30	.606
F3 - TU	Q3	.530		F3 - TU	Q3	.529
	Q31	.636			Q31	.636
	Q38	.612			Q38	.611
	Q52	.476			Q52	.478
	Q4	.741			Q4	.741
F4 - CN	Q11	.675		F4 - CN	Q11	.678
	Q18	.719			Q18	.713
	Q25	.645			Q25	.628
	Q32	.548			Q32	.553
	Q59	.790			Q59	.802
F5 - TO	Q5	.517		F5 - TO	Q5	.533
	Q12	.649			Q12	.650
	Q19	.723			Q19	.717
	Q26	.586			Q26	.590
	Q47	.606	DELETE			
	Q54	.607			Q54	.610
F6 - TMA				F6 - TMA		
	Q20	.718			Q20	.716
	Q34	.592			Q34	.592
	Q41	.666			Q41	.656
	Q48	.634			Q48	.642
	Q40	.651			Q40	.654
F7 - LN				F7 - LN		
	Q21	.402	DELETE			
	Q28	.487			Q28	.490
	Q42	.408			Q42	.405
	Q49	.679			Q49	.691
	Q56	.457			Q56	.449
	Q62	.473			Q62	.493

Summary of Statistics

Table 4.6 contains the model fit indices resulting from the Lisrel VI CFA performed on the original 64 item inventory, and each successive revision. The Lisrel program did not converge in analyzing the original inventory, and revision 1 and 2. This was due to the large number of variables and poor initial fit. Rather than prematurely deleting items on inadequate information, it was decided a better strategy was to split up the initial analysis into two sections. This produced indices for the cohesion factor structure and indices for the locomotion factor structure, as well as allowing a better examination of each individual item and factor. Revision 5, the 35-item inventory, showed significant improvement in fit over the 46-item, revision 3 inventory (chi-square decrease = 722.31, df decrease = 429, $p < .001$). The Q of 1.57 indicated a good fit of the model, an acceptable value under the maximum standard of 2.0 set a priori. The GFI improved from .70 to .76, representing a reasonable fit. However, .80 was needed to accept a good fit. RMSR improved from .081 to .074, an acceptable fit.

The 35-item TBA Inventory was subjected to further analysis to help produce a better fit of the data to the model. Measurement errors of items with high theta delta values were correlated. Correlating measurement errors of observed variables may make sense from a theoretical point of view. Through the theta delta matrix, high values indicate that two items are highly correlated based on their

unexplained variance. One may explain the relationship by the unexplained variance. Thus the item content is examined, and the measurement errors may be correlated if it is theoretically justifiable. This is accomplished by freeing the theta delta relationship, relaxing the off-diagonal element and estimate it as a free parameter in the test of the respecified model. This was done with 6 of the 10 pairs (of items that had high theta delta values) which were theoretically justifiable (see Appendix H). This improved Q from 1.69 to 1.57, increased GFI from .76 to .78, and lowered RMSR from .74 to .72, producing an improved fit of the overall model. A summary of the fit indices for all revised models is given in table 4.6.

The-35 item inventory was subjected to a final item analysis, the results of which are given in table 4.7. The internal consistency, as measured by Cronbach's alpha, is reasonably high for all 7 factors, with no value under .58, and 5 of the 7 factors above .73. From the results presented in tables 4.6 and 4.7, it was concluded that the revised, 35-item TBA Inventory was more reliable and possessed a superior factor structure to the original 64-item inventory (and all revisions preceding revision 5). With 29 less items, it is also a preferred scale from a practical standpoint.

TABLE 4.6 Summary Of Model Fit Indices

		GOODNESS OF FIT				
INVENTORY	ITEMS	X^2	df	X /df	GFI	RMSR
ORIGINAL	64	C=1142.69 L= 572.59	C=623 L=321	C=1.83 L=1.78	C=.72 L=.79	C=.095 L=.094
REVISION 1	56	C= 805.59 L= 394.46	C=458 L=249	C=1.76 L=1.58	C=.76 L=.83	C=.091 L=.078
REVISION 2	50	C=1068.17 L= 325.12	C=619 L=206	C=1.73 L=1.58	C=.73 L=.85	C=.084 L=.077
REVISION 3	46	1631.54	968	1.69	.70	.081
REVISION 4	38	1054.38	644	1.64	.74	.077
REVISION 5	35	909.23	539	1.69	.76	.074
REV. 5 +TD	35	835.24	533	1.57	.78	.072

Table 4.7

Internal Consistency Statistics

		INTERNAL CONSISTENCY						
INVENTORY	ITEMS	TM	TI	TU	CN	TO	TMA	LN
ORIGINAL	64	.43	.71	.71	.67	.74	.60	.65
REVISION 1	56	.48	.78	.76	.77	.76	.79	.65
REVISION 2	50	.55	.78	.77	.77	.76	.79	.65
REVISION 3	46	.62	.78	.76	.81	.77	.79	.67
REVISION 4	38	.58	.78	.73	.81	.77	.79	.64
REVISION 5	35	.58	.78	.73	.81	.75	.79	.62

Validity of Hypothesized Model Structure

First-Order Factor Structure. Following the last statistical runs, the revised, 35 item model provided a reasonably good fit to the 7 factor structure. The CFA data provided empirical support for the 7 first-order factor structure, and EFA did not suggest any better fit. All of the items loaded reasonably well, while modification indices did not suggest a reordering (see appendix L, p. 134). However, some of the factors correlate very highly (e.g., TM and TI correlate .875, which suggests 5 items on one factor are a good measure of the other construct).

The correlation between the factors is given in table 4.8, which is the Phi matrix from the CFA Lisrel output. These correlations are the correlations between the latent constructs, with measurement error having been accounted for (correcting for attentuation is not necessary in CFA, as the model already accounts for the theta delta error). TI seems to represent an overall cohesion factor, as it correlates highly with all 3 other cohesion measures. CN and LN are very highly correlated (.948). There is a large degree of communality between these factors. Although the factor structure supported this type of model, further work is required to determine if normative behavior has separate cohesion and locomotion components. Further research, for example, may combine CN and LN into one factor, and refine and restructure the remaining 3 cohesion constructs into 2 factors.

Table 4.8

Inter-factor Correlations

	TM	TI	TU	CN	TO	TMA	LN
TM	1.000	0.875	0.278	0.753	0.573	0.192	0.654
TI	0.875	1.000	0.646	0.698	0.503	0.096	0.484
TU	0.278	0.646	1.000	0.283	0.216	0.160	0.155
CN	0.753	0.698	0.283	1.000	0.725	0.138	0.948
TO	0.573	0.503	0.216	0.725	1.000	0.348	0.745
TMA	0.192	0.096	0.160	0.138	0.348	1.000	0.209
LN	0.654	0.484	0.155	0.948	0.745	0.209	1.000

Second-Order Factor Structure. The investigator did attempt to account for the relationship among the factors with a second-order CFA by fitting the first-order data to a 2 factor structure. However, due to high correlations between individual factors (e.g., CN and LN), the hypothesized second-order factor fit was not supported by the empirical data.

Although the 2 factor second-order structure had not been empirically verified, the validity and reliability statistics for the cohesion and locomotion components were presented because they are theoretically justifiable. Hopefully further work will provide empirical evidence to the existence of the second-order factors.

Questionnaire Return: Phase B Validity and Reliability Studies

Validity

Individual athletes from the University of British Columbia were administered the TBA Inventory (N=53) (refer to table 3.3 for a list of subjects by sport). All 53 inventories were completed and useable, representing a 100 per cent response rate. These subjects, with a mean age of 21.4 years (s=1.9), had been involved on their current team a mean of 2.0 years (s=1.4). The mean length of participation in that sport was 9.6 years (s=3.8). The individual athletes had a mean of 82.0 per cent individual sport background.

The individual athlete TBA Inventory scores were collected to compare to team athlete scores for a known groups difference test. The team athletes were selected from the Phase A group (N=153). A sub sample of University of British Columbia team athletes (N=53) from the Phase A group were selected based on university attended and similar level of competition. Subjects were from hockey (N=16), volleyball (N=17), basketball (N=11), and rugby (N=9). They had a mean age of 21.2 years (s=2.2). The team athlete subjects had been on that team for a mean 2.4 years (s=1.4) and had a mean of 10.4 years (s=4.7) experience in that sport.

Coaches from 17 teams representing 5 sports (see table 3.2 for distribution by sport and school) were sent a

cohesion and locomotion scale to rate their veterans. Only 3 of the 17 coaches' scales were both returned and useable, representing a 17.6 per cent response rate. A further 6 coaches had returned completed scales, however their athletes' TBA Inventories were not returned to enable their inclusion in a correlation analysis. The 3 completed rating scales (N=30) were received from University of Alberta hockey, University of Lethbridge hockey, and University of Alberta basketball.

Reliability (Stability)

Team athletes from the University of British Columbia who had completed the TBA INventory in Phase A testing (N=53) completed the TBA Inventory a second time 3 to 4 weeks following their initial testing. Complete and useable inventories (N=52) represented a 98.1 per cent response rate. Subjects represented four sports: hockey (N=16); volleyball (N=16); basketball (N=11); and rugby (N=9). Subject mean age was 21.3 years (s=2.2). The mean duration on that team was 2.4 years (s=1.4). The mean years participation in that sport was 10.5 (s=4.7).

Data Analysis: Validity and Reliability

Construct Validity

Criterion Related Validity. Table 4.9 presents the results of the Hotelling's T-squared independent multivariate analysis conducted to determine if the 7 factor scores would discriminate between individual and team

athletes. Additionally, a t-test was conducted on the total score (TBA). For the 7 factors and TBA total, the differences between the two groups were significant < .001). Follow-up univariate test statistics between individual and team athlete means were significant (p< .001) for all 7 factor scores. Factors 4, 5, and 6 appeared to be the most powerful discriminators. The results of this known groups difference test support the concept of construct validity.

Table 4.9

Team Athlete Versus Individual Athlete TBA Inventory Score Means

	$\bar{X}$		Univariate	
Independent Variables	Team Athletes	Individual Athletes	* t	p
F1 - TM	30.2	23.4	10.34	< .001
F2 - TI	29.9	26.8	4.23	< .001
F3 - TU	27.2	19.3	10.15	< .001
F4 - CN	28.3	17.3	13.48	< .001
F5 - TO	29.1	19.0	12.77	< .001
F6 - TMA	23.5	12.4	11.34	< .001
F7 - LN	27.5	21.2	7.16	< .001
TBA TOTAL	195.6	139.4	16.16	< .001

* Hotellings T2 for the vector of 7 factors equalled 378.1 (7,98), p< .001.

Concurrent Validity. Coaches' observations were compared to athlete TBA Inventory scores using correlations. Correlations were computed between the 7 factors, 2 second order factors, a TBA total score, and the coaches' cohesion and locomotion rating. Table 4.91 presents the Pearson correlation coefficients. For the coaches' cohesion rating, 9 of the correlations were under .40. The highest correlation, between TI (F2) and the coaches' cohesion rating, was only .53. Similarly, correlations were low between the athlete scores and the coaches' locomotion rating. With the exception of TI (r=.52), all correlations between the athlete TBA Inventory measures and the coaches' locomotion rating were below .45. Players coaches rated high on the locomotion component scored reasonably high on LN (F7). The results of the correlation coefficients do not provide support for concurrent validity for the TBA Inventory. This may be a result of the low response rate (only 3 coaches ratings were used), or due to a poor external validation source. If the coaches were inaccurate in their assessment of their players, these errors would be amplified with only 3 coach respondents (and only 30 athletes rated in total).

Table 4.91

Pearson Correlation Coefficients

Athlete Scores	Coaches' Rating: Cohesion	Coaches' Rating: Locomotion
TM	.123	.187
TI	.528	.516
TU	-.035	-.060
CN	.313	.419
TO	.324	.387
TMA	-.043	.100
LN	.332	.448
COH	.279	.314
LOC	.179	.321
TBA	.266	.366

Test-Retest Reliability (Stability)

A paired-samples test compared the initial Phase A test scores to the Phase B retest scores. Table 4.92 presents the results of the correlated t-test for the 7 factor scores, the 2 second order factors, and a TBA total score. The difference between the means for all 10 measures was non-significant. All test-retest correlations were very high, with no correlation below .70 and 8 correlations above .80, indicating stability over time.

Table 4.92

Test - Retest Statistics: Correlated T-Tests

Factor	Time	$\bar{X}$	r	t Value	2 Tail Prob
F1 - TM	Test 1	30.56	0.79	1.05	0.298
	Retest	30.25			
F2 - TI	Test 1	30.04	0.72	-0.29	0.775
	Retest	30.13			
F3 - TU	Test 1	27.12	0.92	-1.02	0.314
	Retest	27.38			
F4 - CN	Test 1	28.44	0.90	0.00	1.000
	Retest	28.44			
F5 - TO	Test 1	29.17	0.88	1.60	0.115
	Retest	28.75			
F6 - TMA	Test 1	23.71	0.88	1.39	0.171
	Retest	23.19			
F7 - LN	Test 1	27.40	0.80	-0.63	0.531
	Retest	27.62			
COH	Test 1	116.15	0.89	-0.08	0.938
	Retest	116.21			
LOC	Test 1	80.29	0.89	1.14	0.261
	Retest	79.56			
TBA TOTAL	Test 1	196.44	0.92	0.64	0.528
	Retest	195.77			

CHAPTER IV

Summary and Conclusions

The purpose of this study was to develop a valid and reliable team-orientation instrument which measures tendencies towards multidimensional team-based attitudes within interactive, interdependent elite sport groups. The inventory was constructed to differentiate between team oriented and individualistic athletes. A hypothesized Team-Based Attitude model was developed based strongly on theoretical evidence. Subjects from team sports (N=153) within the Canada West University Athletic Association completed the TBA Inventory to test the factor structure of the hypothesized model. Confirmatory factor analysis, exploratory factor analysis, and reliabilty (internal consistency) statistics were used to test the goodness of fit of items to constructs.

A revised, 35-item, 7-factor structure was supported by high factor loadings, significant t-values, low normalized residuals, and acceptable Q and RMSR values. Internal consistency held up reasonably well with high alpha values. Future analysis could work to further improve the overall fit of the model. Specifically, GFI needs to be above .80, relatively high inter-factor correlations exist, and several item-total correlations are below .50. Those concerns suggest a more parsimonious solution may be possible through further analysis.

A subsample of the initial respondents completed the TBA Inventory a second time. Test-retest results from paired correlated t-tests supported the stability of the inventory means, and high test-retest correlations indicate reliability over time. A known-group difference test provided evidence for construct validity, clearly differentiating between individual athletes and team athletes. Independent groups Hotellings T2 were significant for all factors and a TBA total score. Construct validity was also tested by comparing coaches' ratings to athletes' inventory scores. Construct validity was not supported by correlation coefficients, possibly due to too few coach respondents. This test was dependent on the coaches accurately providing the source of external criteria for validation. Inaccurate coach evaluations would be amplified with such a small subject base. The results suggest that some coaches may be unable to accurately assess their athletes' level of TBA, providing further support for the need for such an inventory. The TBA Inventory, once further validated, could help coaches assess athletes' attitudes. Descrepancies in inventory results could provide the coach with the awareness to adapt his coaching style to better suit his-her players. Information gained from the TBA Inventory may be acted on by having a sport psychologist speak to the players on the importance of cohesion, cooperation, and teamwork.

The 35-item, 7-factor inventory is considered to have

psychometric properties supportive of internal consistency and structural reliabilty. But it is only after a long and rigorous validation period that the TBA Inventory may be used for research examining team dynamics. Past cohesion studies and instruments have focussed on athletes' perception of their present team's level of cohesion in that particular season. The TBA Inventory possesses the ability to differentiate between individuals within a team, and can be used to investigate how individuals influence group structure and dynamics. The inventory will allow researchers to measure individual characteristics that may be antecedents to or may mediate the level of cohesion and locomotion within a team. The TBA Inventory also presents the exciting possibility to analyze the cohesion-performance relationship from a new perspective.

Further testing of the TBA factor structure is needed. Validity and reliabiltiy should be assessed using larger subject populations, testing female subjects, different sports, different ages, and different levels of competition level. Given the possible research applications of the TBA Inventory, it is highly recommended that sport scientists test the inventory with numerous pilot tests, to refine the inventory, provide strong goodness of fit measures to further support the TBA model, and develop generalizability to various groups and populations.

References

Alderman, R. (1974). Psychological Behavior In Sport. Toronto, Ontario: W. B. Saunders Company

Allport, G. (1935). Attitudes. In C. Murchison (Ed.), Handbook of Social Psychology. Worcestor, MA: Clark University Press, 798-844.

American Psychological Association. (1979). Ethical Standards of Psychologists. Washington: American Psychological Association Inc.

Back, K. (1951). Influence through social communication. Journal Abnormal and Social Psychology, 46, 9-23.

Ball, J., & Carron, A. (1976). The influence of team cohesion and participation motivation upon performance success in intercollegiate ice hockey. Canadian Journal of Applied Sport Sciences, 1, 271-275.

Baron, R., Byrne, D., & Kantowitz, B. (1980). Psychology: Understanding Behavior. New York: Holt, Rinehart & Winston.

Baron, R., & Byrne, D. (1984). Social Psychology: Understanding Human Interaction. Boston, London, Sydney, Toronto: Allyn & Bacon Inc.

Bass, B. (1961). Comparisons of the behavior in groups of self-oriented interaction-oriented and task-oriented members. Tech. Rep.

25Contract N79NR 35609, Louisiana State University, Baton Rouge.

Bass, B. (1962). The Orientation Inventory. Palo Alto, California: Consulting Psychologists Press.

Bentler, P. (1985). Theory & Implementation of EQS: A Structural Equation Program. Los Angelos: BMPD Statistical Software Inc.

Botterill, C. (1978). Psychology of coaching. In Proceedings: 1978 National Coaches Certification Program, Level Five Seminar. Montreal: University of Montreal.

Butt, D.S. (1987). The Psychology of Sport: The Behavior, Motivation, Personality, and Performance of Athletes. New York: Van Nostrand Reinhold Company.

Carron, A. (1982). Cohesiveness in sport groups: Interpretations and considerations. Journal of Sport Psychology, 4, 123-138.

Carron, A. (1984). Motivation: Implications for Coaching and Teaching. London, Ontario: Sport Dynamics.

Carron, A. (1980). Social Psychology of Sport. Ithaca, New York: Mouvement Publications.

Carron, A., & Chelladurai, P. (1981). The dynamics of group cohesion in sport. Journal of Sport Psychology, 3, 123-139.

Cartwright, D., & Zander, A. (1960). Group Dynamics: Research and Theory. New York: Harper and Row Publishers.

Cartwright, D., & Zander, A. (1968). Group Dynamics: Research and Theory. New York: Harper and Row.

Cattell, R. (1948). Concepts and methods in the measurement of group syntality. Psychological Review, 1948, 55, 48-63.

Chaplin, W., John, O., & Goldberg, L. (1988). Concepts of states and traits: dimensional attributes with ideals as prototypes. Journal of Personality and Social Psychology, 54(4), 541-557.

Cofer, C., & Johnson, W. (1960). Personality dynamics in relation to exercise and sports. In W. Johnson (Ed.), Science and Medicine of Exercise and Sport. Harper.

Cox, R. (1985). Sport Psychology: Concepts and Applications. Dubuque, Iowa: William C. Brown Publishers.

Epstein, S., & O'Brien, E. (1985). The person-situation debate in historical and current perspective. Psychological Bulletin, 98(3), 513-537.

Fishbein, M., & Ajzen, I. Attitudes toward objects as predictors of single and multiple behavioral criteria. Psychological Review, 1974, 81, 59-74.

Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior: An Introduction To Theory and Research. Reading, MA: Addison-Wesley.

Festinger, L., Schachter, S., & Back, K. (1950). Social Pressures In Informal Groups: A Study of a Housing Committe. New York: Harper.

Gill, D. (1986). Psychological Dynamics of Sport. Champaign, Illinois: Human Kinetic Publishers, Inc.

Gross, N., & Martin, W. (1952). On group cohesiveness. American Journal of Sociology, 57, 533-546.

Haig, G. (1989). Predictors and Consequences of Involvement in Physical Activity: A Causal Model of the 1981 Canada Fitness Survey. University of British Columbia: Unpublished Masters Thesis.

Hammer, W. (1967). A comparison of differences in manifest anxiety in university athletes and nonathletes. Journal of Sports Medicine and Physical Fitness, 7, 31-34.

Jones, J., & Williamson, S. (1979). Athletic profile inventroy (API): Assessment of athlete's attitudes and values. In J. Goldstein (Ed.), Sports, Games, and Play: Social and Psychological Viewpoints. Hillsdale, New Jersey: Lawrence Erlbaum, 157-188.

Joreskog, K.G. & Sorbom, D. (1984). Lisrel V1: Analysis Of Linear Structural Relationships By The Method Of Maximum Likelihood.

Kane, J. (1967). Personality profiles of physical education students compared with others. In Proceedings: First International Congress of Sport Psychology, Rome.

Kumar, A., Pathak, N., & Thakur, G. (1985). Death anxiety and locus of control in individual team and non-athletes. International of Sport Psychology, 16, 280-288.

Landers, D., Wilkinson, M., Hatfield, B., & Barber, H. (1982). Causality and the cohesion-performance relationship. Journal Of Sport Psychology, 4(2), 170-183.

Lazarus, R., & Monat, A. (1979). Personality. Englewood Cliffs, NJ: Prentice-Hall.

Lefebve, L. (1975). Social motives in team sports: an experimental approach. In D. Landers (Ed.), Psychology of Sport and Motor Behavior II, Proceedings: North American Society for the Psychology of Sport and Physical Activity. Pennsyvania: The Pennsyvania State University, 271-280.

Lewin, K. (1935). A Dynamic Theory of Personality. McGraw-Hill.

McGowan & Gormly. (1976). Validation of personality traits: a multicriteria approach. Journal of Personality and Social Psychology, 34, 791-795.

NASPSPA. (1981). Standards for Psychological Testing Within Sport.

Peterson, S., Ukler, J., & Trousdale, W. (1967). Personality traits of women in team and women in individual sports. Research Quarterly, 38, 686-690.

Petty, R., & Cacioppo, J. (1981). Attitudes and Persuasion: Classic and Contemporary Approaches. Dubuque, IA: William C. Brown Publishers.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 8, 1-28.

Sage, G. (1972). An assessment of personality profiles between and within intercollegiate athletes from eight different sports. Sportswissenchaft, 2, 409-418.

Sampson, E. Psychology and the American ideal. (1977) Journal of Personality and Social Psychology, 35, 767-782.

Schurr, K., Ashley, M., & Joy, K. (1977). A multivariate analysis of male athlete characteristics: sport type and success. Multivariate Clinical Research, 3, 53-68.

Silva, J., & Weinberg, R. (Eds.). (1984). Psychological Foundations of Sport. Champaign, Illinois: Human Kinetics Publishers, Inc.

Smith, F. & Smoll, F. (1986). Survey of Athletic Experience. Unpublished manuscript.

Stogdill, R. (1972). Group productivity, drive, and cohesiveness. Organizational Behavior and Human Performanc, 8, 26-43.

Stodgill, R. (1959). Individual Behavior and Group Achievement. New York: Oxford.

Stogdill, R. (1963). Team Achievement Under High Motivation. Columbia: Bureau of Business Research, Ohio State University.

Twist, P. (1987). Multi-Attribute Theory. Unpublished Math Models 551 project, University of British Columbia,.

Van Ergeren, L. (1979). Social interactions, communications, and the coronary-prone behavior pattern: A psychophysiological study. Psychosomatic Medicine, 4, 2-18.

Weiner, B., & Kukla, A. (1971). An attributional analysis of achievement motivation. Journal of Personality and Social Psychology, 15, 1-20.

Widmeyer, N., Brawley, L., & Carron, A. (1985). The Measurement of Cohesion in Sport Teams: The Group Environment Questionnaire. London, Ontario: Sports Dynamics.

Widmeyer, N., & Martens, R. (1978). When cohesion predicts performance outcome in sport. Research Quarterly, 49, 372-380.

Yukelson, D., Weinberg, R., & Jackson, A. (1984). A Multidimensional group cohesion instrument for intercollegiate basketball teams. Journal of Sport Psychology, 6, 103-117.

Zander, A. (1982). Making Groups Effective. San Francisco, California: Jossey-Bass Publishers.

Zander, A. (1985). The Purposes of Groups and Organizations. San Francisco, California: Jossey-Bass Publishers.

Appendix A

Initial Item Pool Matched With Constructs

INITIAL 102 ITEM POOL MATCHED WITH CONSTRUCTS

TEAM MAINTENANCE

1. It is important for team members to be loyal to the team.
2. Teammates can really help and support one another.
3. If a team is unsuccessful, the athletes must stick together if they hope to start winning.
4. Athletes should attend the practice setting even when injured.
5. When things get too tough with the team (ie: a hard driving coach; consistently losing; etc.), I would quit and pursue something more enjoyable.
6. Teams should be structured to allow a player to miss practice if he needs to study or attend another event that is scheduled.
7. Athletes must organize other interests in their life (school, work, social, etc.) so that they never interfere with their committment and responsibilities with the team.
8. Even if my team was losing all of its games, I would rather stick with it and try to work out of the slump than move to another team or activity.
9. I think that initiations which degrade the rookies have a negative effect on the team.
10. The status of veterans and rookies should be separated in the dressing room and on the road until the rookies go through their initiation event.
11. Veterans should make rookies feel as comfortable as possible with the team, to help build a stable team.
12. Rookie initiations really have no needed purpose, because each rookie has earned a spot with the team through a successful training camp.

13. Everyone on the team should take responsibility for any poor performance or loss by the team.

14. On weak teams, coaches are unlikely to get rid of individualistic players who have a really negative attitude because the team is in need of their superior sport abilities. But I believe that if the coach cuts this player, the team as a whole will improve their attitude and sport performance in his absence.

15. Being accepted by my teammates is very important to me.

TEAM IDENTITY

1. I really value my membership on teams.

2. I take pride in my involvement on a team.

3. I value being considered a part of the group whenever team members do anything.

4. It is important to me that the coach and fans acknowledge my contribution to the team.

5. I usually have a strong sense of belonging to my sport teams.

6. It is important for athletes to value their membership on teams.

7. I think that teams should dress up (ie: wear a tie) on game days.

8. I like to have team jackets and team clothing so I can publically be identified with the team.

9. I think that team jackets are important because they identify us as a group.

10. I am usually proud of my team association.

11. Team involvement is more satisfying when I have a strong sense of belonging on the team.

TEAM UNITY

1. I think a team can become stronger as a unit if it spends time together outside the sports environment.

2. It is important for members of the team to stick together outside of practices and competitions.

3. For me a team is one of the most important social groups I belong to.

4. Following games and practices, I usually get changed and shower quickly, leaving the dressing room as soon as possible.

5. I do not enjoy being a part of social activities on teams.

6. A team with individuals who get along well will outperform a team with individuals who argue alot.

7. I like to take my time getting dressed before games and practices and getting changed afterward, to hang around the dressing room for a bit.

8. I try to include team members in my plans for social activities.

9. Team spirit is important to winning.

10. Team harmony and closeness can lead to outperforming another team with more individual stars.

11. I would like to spend time together with teammates in the off season.

12. I usually miss the members of my team when the season ends.

13. Some of my best friends were met through teams.

14. I usually enjoy other parties more than team parties.

15. I usually don't form close friendships with my teammates.

16. Spending extra time together outside of the sport environment can help strengthen the group as a whole.

17. I think it is a good idea to have 'team houses', where groups of players from a team would live together during the competitive season.

18. Whether a team wins or loses, the team's athletes should go out together after the game.

19. Team functions are important at the very start of the season, to make the athletes feel comfortable with each other.

20. After a loss, the team can pull together and lift their morale by going out together.

21. No amount of drills and practices will create a "team" - athletes need other activities, and need to hang out together before they can become a "team".

22. Off-ice cohesion promotes on-ice cohesion.

COHESIVE NORMS

1. I try to conform to the rules of the team to help it get along as a unit.

2. Team rules are important to help maintain the team as a group.

3. If it is common behavior for the team to socialize together after competitions, I would willingly join in.

4. Even though I may not agree with certain team rules, and may not want to comply to the coach's demands, I would follow the rules to be true to my teammates and to do what is best for the team.

5. Group norms and rules foster group strength.

6. A player does not have to agree with team rules, but he should readily accept them.

7. Attendance at team breakfasts on the road, dress codes, and punctuality rules (etc.) are important to comply to because they help ensure the team remains strong as a group.

8. Teams should set rules for acceptable behaviors to help the team resist disruptive forces.

9. An athlete's failure to comply to team rules has a negative effect on team cohesion.

10. Athletes must conform to team demands and rules to remain united and strong as a group.

11. Willingly adhering to team rules helps to ensure the team remains strong as a group.

12. An athlete should resist social pressures to conform in a team to maintain his individuality.

13. I usually follow the team's rules for accepted

behavior because I realize there are advantages for the team from uniformity in behavior.

14. Coaches and veterans should set team rules which help maintain a cohesive group.

TASK ORIENTATION

1. For the team to be successful, teammates must aspire the same team performance goals.

2. It is important for the athlete to work towards team accomplishments.

3. It is important to set team goals for each player to work towards if the team is to be successful.

4. A player should direct all of his efforts towards the team's goals.

5. It is important for athletes to have individual goals, but they should not interfere with the team's goals.

6. Sometimes it bothers me when working for team goals gets in the way of my individual accomplishments.

7. The team's goals is usually my main incentive for participation.

8. Athlete's goal setting must include team goals.

9. The coach should set team goals for us to work towards.

TEAM MOTIVATION AND ASPIRATIONS

1. When training during the off season, I think of a team championship.

2. I have less of a desire for success for myself than I do for the team.

3. It is important to me that the team is successful, but it is more important that I do well.

4. I participate to have fun and for personal success - but team success is a nice bonus.

5. I get very "high" after wins or team success, and

very "down" after losses or team failures.

6. Even if my teammates didn't play well and my team lost, I would be satisfied if I performed really well.

7. I am more strongly motivated to reach a new personal best rather than simply achieving group success.

8. A team win is satisfying, but I would be much happier to be recognized individually for my efforts.

9. I like to participate for the opportunity to showcase my individual talents.

10. Winning in sport is the most important thing even when I play badly.

LOCOMOTIVE NORMS

1. I wouldn't mind being moved to a position where I score less points and receive less recognition if it would help the team.

2. I don't like playing according to a team's system or style if it hinders my individual abilities and performance.

3. I try to change the way I play to satisfy the coach.

4. With a few top superstars, a team can win even without teamwork.

5. Teammwork is very important to winning.

6. Everyone on the team has a role to play to help the team win.

7. If an athlete disagrees with the coach in practice, he should not question the coach until after the practice has ended.

8. I don't have to be pushed to practice or play hard; I give 100 %.

9. I improve my skills by listening carefully to advice from coaches.

10. Athletes must be willing to follow team standards which promote advancement toward team goals.

11. I accept team rules and follow them because they are

set to facilitate team success.

12. The coach should set rules for normative behaviors which ensure intra-team cooperation during competitions.

13. When one of my teammates makes a mistake in the game, I offer support and encouragement.

14. If a coach criticizes or yells at me, I correct the mistake without getting upset about it.

15. When I'm hurt, I play through the pain and don't let it affect me or the team.

16. Athletes should follow the coaches instructions and practices without arguement.

17. When my team loses, I try to think of what else I could have done to help make us successful.

18. I am willing to compete while injured if I can still help the team.

19. Athletes should communicate in competitions to cooperate as a team, and also to offer support and encouragement.

20. I would be commited to the team and striving towards it's goals even if the coach relegates me to a role I am not satisfied with.

21. I take a strong stand in arguements with my coaches.

Appendix B

Item Validation By Expert Opinion

TEAM-BASED ATTITUDE INVENTORY:

ITEM VALIDATION BY EXPERT OPINION

Five experts from the fields of sport psychology and coaching will provide an initial item validation by indicating whether or not they think each item fits under the appointed component. Items consistently rated appropriate for the appointed component will be retained for pilot testing. Items consistently rated not appropriate for the appointed component will be subjected to further analysis, whereby judges sort these items into the components (if any) they think are appropriate.

I am asking you to sit on this panel, to assist in the initial item validation by expert opinion. Based on the operational definition provided, please indicate if you think each item fits with the appointed component by answering "yes" or "no".

Thank you for your assistance. Based on the results from the panel, items not initially retained for pilot testing will be returned to you at a later date for a type of Q-sort technique.

COMPONENT: TEAM MAINTENANCE

DEFINITION: -Refers to team members supporting each other, and the willingness to stick together to maintain a stable environment.
-Preserving the team's structure.
-loyalty, sacrifice, stability, preservation and support, dependability, sticking together.

ITEMS:

1. It is important for team members to be loyal to the team.

YES [ ] NO [ ]

2. Teammates can really help and support one another.

YES [ ] NO [ ]

3. If a team is unsuccessful, the athletes must stick together if they hope to start winning.

YES [ ] NO [ ]

4. Athletes should attend the practice setting even when injured.

YES [ ] NO [ ]

5. Teams should be structured to allow a player to miss practice if he needs to study or attend another event that is scheduled.

YES [ ] NO [ ]

6. Athletes must organize other interests in their life (school, work, social, etc.) so that they never interfere with their committment and responsibilities with the team.

YES [ ] NO [ ]

7. I think that initiations which degrade the rookies have a negative effect on the team.

YES [ ] NO [ ]

8. The status of veterans and rookies should be separated in the dressing room and on the road until the rookies go through their initiation event.

YES [ ] NO [ ]

9. Everyone on the team should take responsibiltiy for any poor performance or loss by the team.

YES [ ] NO [ ]

10. When things get too tough with the team (ie: a hard driving coach; consistently losing; etc.), I would quit and pursue something more enjoyable.

YES [ ] NO [ ]

11. Even if my team was losing all of it's games, I would rather stick with it and try to work out of the slump than move to another team or activity.

YES [ ] NO [ ]

COMPONENT: TEAM IDENTITY

DEFINITION: -Reflects one's desire to belong and remain in a group because of pride in membership and valuing membership.
-Attraction to the group.

ITEMS:

1. I really value my membership on teams.

YES [ ] NO [ ]

2. I take pride in my involvement on a team.

YES [ ] NO [ ]

3. I value being considered a part of the group whenever team members do anything.

YES [ ] NO [ ]

4. It is important to me that the coach and fans acknowledge my contributions to the team.

YES [ ] NO [ ]

5. I usually have a strong sense of belonging to my sport teams.

YES [ ] NO [ ]

6. I am usually proud of my membership on teams.

YES [ ] NO [ ]

7. I think that teams should dress up (ie: wear a tie) on game days.

YES [ ] NO [ ]

8. I like to have team jackets and team clothing so I can be publically identified with the team.

YES NO
[ ] [ ]

9. Team involvement is more satisfying when I have a strong sense of belonging on the team.

YES NO
[ ] [ ]

COMPONENT: TEAM UNITY

DEFINITION: -Team harmony, morale, and team spirit.
-"social" cohesion.
-Based on the hypothesis that unity increases the more time athletes spend together outside the sports environment.
-Facilitated through proximity (familiarity breeds a cohesive group).

ITEMS:

1. I think a team can become stronger as a unit if it spends time together outside the sports environment.

YES [ ] NO [ ]

2. For me a team is the most important social group I belong to.

YES [ ] NO [ ]

3. Following practices and games, I usually get changed and shower quickly, leaving the dressing room as soon as possible.

YES [ ] NO [ ]

4. A team with individuals who get along well will out perform a team with individuals who argue alot.

YES [ ] NO [ ]

5. I Like to take my time dressing before practices and games and getting changed afterward, to hang around the dressing room for a bit.

YES [ ] NO [ ]

6. I try to include team members in my plans for social activities.

YES [ ] NO [ ]

7. Team spirit is important to winning.

YES [ ] NO [ ]

8. Team harmony and closeness can lead to out performing another team with more individual stars.

YES [ ] NO [ ]

9. I usually enjoy other parties more than team parties.

YES [ ] NO [ ]

10. I usually miss the members of my team when the season ends.

YES [ ] NO [ ]

11. I think it is a good idea to have "team houses", where groups of athletes from a team would live together during the competitive season.

YES [ ] NO [ ]

12. Whether a team wins or loses, the team's athletes should go out together after the game.

YES [ ] NO [ ]

13. No amount of drills and practices will create a "team" - athletes need other activities, and need to hang out together before they can become a "team".

YES [ ] NO [ ]

COMPONENT: COHESIVE NORMS

DEFINITION: -Normative behaviors enforced and followed which ensure the team remains strong as a group.
-The willingness and desire to comply to norms which facilitate cohesion.
-Conforming to behavior requested of you to facilitate team maintenance, team identity, and team unity.

ITEMS:

1. I try to conform to the rules of the team to help it get along as a unit.

YES [ ] NO [ ]

2. Team rules are important to help maintain the team as a group.

YES [ ] NO [ ]

3. If it is common behavior for the team to socialize together after competitions, I would willingly join in.

YES [ ] NO [ ]

4. A player does not have to agree with team rules, but he should readily accept them.

YES [ ] NO [ ]

5. Attendance at team breakfasts on the road, dress codes, and punctuality rules (etc.) are important to comply to because they help ensure the team remains strong as a group.

YES [ ] NO [ ]

6. If an athlete disagrees with the coach in practice, he should not question the coach until after the practice has ended.

YES [ ] NO [ ]

7. Teams should set rules for acceptable behaviors to help the team resist disruptive forces.

YES [ ] NO [ ]

8. An athlete's failure to comply to team rules has a negative effect on team cohesion.

YES [ ] NO [ ]

9. An athlete should resist social pressures to conform in a team to maintain his individuality.

YES [ ] NO [ ]

10. Coaches and veterans should set team rules which help maintain a cohesive group.

YES [ ] NO [ ]

11. Athletes must conform to team demands and rules to remain united and strong as a group.

YES [ ] NO [ ]

COMPONENT: TASK ORIENTATION

DEFINITION: -An athlete's tendancy to direct his/her efforts towards achieving team goals and objectives.
-Positive evaluation of the importance of the team's goals and objectives.

ITEMS:

1. For the team to be successful, teammates must aspire the same team performance goals.

YES [ ] NO [ ]

2. It is important for the athlete to work towards team accomplishments.

YES [ ] NO [ ]

3. It is important to set team goals for each player to work towards if the team is to be successful.

YES [ ] NO [ ]

4. A player should direct all of his efforts towards the team's goals.

YES [ ] NO [ ]

5. It is important for athletes to have individual goals, but they should not interfere with the team's goals.

YES [ ] NO [ ]

6. Sometimes it bothers me when working for team goals gets in the way of my individual accomplishments.

YES [ ] NO [ ]

7. The team's goal is usually my main incentive for participation.

YES [ ] NO [ ]

8. An athlete's goal setting must include team goals.

YES [ ] NO [ ]

COMPONENT: TEAM MOTIVATION AND ASPIRATIONS

DEFINITION: -Team motivation and aspirations serve to direct behavior toward team accomplishments, through the desire for team success and finding pride in this success.
-The team's goal is the main incentive property for participation.

ITEMS:

1. When training during the off-season, I think of a team championship.

YES [ ] NO [ ]

2. It is important to me that the team is successful, but it is more important that I do well.

YES [ ] NO [ ]

3. I participate to have fun and for personal success - but team success is a nice bonus.

YES [ ] NO [ ]

4. I get very "high" after wins or team success, and very "down" after loses or team failures.

YES [ ] NO [ ]

5. Even if my teammates didn't play well and my team lost, I would be satisfied if I performed really well.

YES [ ] NO [ ]

6. I am more strongly motivated to reach a new personal best rather than simply achieving group success.

YES [ ] NO [ ]

7. A team win is satisfying, but I would be much happier to be recognized individually for my efforts.

YES [ ] NO [ ]

8. I like to participate for the opportunity to showcase my individual talents.

YES [ ] NO [ ]

9. Winning in sport is the most important thing even when I play badly.

YES [ ] NO [ ]

COMPONENT: LOCOMOTIVE NORMS

DEFINITION: -Normative behavior enforced and followed which ensures intra-team cooperation.
-The willingness to follow team standards and procedures which promote advancement toward team goals.

ITEMS:

1. I wouldn't mind being moved to a position where I score less points and receive less recognition if it would help the team.

YES [ ] NO [ ]

2. I try to change the way I play to satisfy the coach.

YES [ ] NO [ ]

3. With a few top superstars, a team can win even without teamwork.

YES [ ] NO [ ]

4. Everyone on the team has a role to play to help the team win.

YES [ ] NO [ ]

5. I don't have to be pushed to practice or play hard; I give 100 %.

YES [ ] NO [ ]

6. I accept team rules and follow them because they are set to facilitate team success.

YES [ ] NO [ ]

7. I improve my skills by listening carefully to advice from coaches.

YES [ ] NO [ ]

8. Athletes should follow the coach's instructions and practices without argument.

YES [ ] NO [ ]

9. When one of my teammates make a mistake in the game, I offer support and encouragement.

YES [ ] NO [ ]

10. If a coach criticizes or yells at me, I correct the mistake without getting upset about it.

YES [ ] NO [ ]

11. When my team loses, I try to think of what else I could have done to help make us successful.

YES [ ] NO [ ]

12. I am willing to compete when injured if I feel I can still help the team.

YES [ ] NO [ ]

Appendix C

Original 64 Item TBA Inventory

The University Of British Columbia
School of Physical Education
6081 University Blvd.
Vancouver, B.C.
V6T 1W5

TEAM-BASED ATTITUDE: THEORY DEVELOPMENT, INVENTORY CONSTRUCTION, AND PSYCHOMETRIC ANALYSIS

Dear Participant:

PURPOSE: The purpose of this study is to develop a team-orientation instrument which measures attitudes of athletes within elite sport groups. Your responses on this preliminary questionnaire will help us develop the final Team-Based Attitude Inventory.

BENEFITS: The inventory, once developed, will be used by sport researchers to further the knowledge and understanding of individuals within a team, and how these individuals affect group structure and processes. This information will lead to an educational process for coaches to help them better understand athletes' needs and attitudes. I appreciate you approaching these questions seriously - it is your answers which will help gather knowledge on athletes' attitudes.

DIRECTIONS: Your participation in the study is completey voluntary. If you can participate in the study, please sign and date the attached consent form below. In order to guarantee anonymity, the consent form will be torn off from the rest of the questionnaire immediately upon its return. Someone from outside of your team has been asked to hand out these questionnaires to ensure none of your coaches or managers see any of your responses. The questionnaires are collected and returned directly to myself - your responses will be kept in the strictest confidence. I appreciate your honesty in answering questions - this will definitely help educate developing coaches in the future.

The following questions are designed to assess your feelings about teams in general. Do not limit yourself to the team you are presently involved in, but try to think of how you feel about team involvement in general, and of your overall experience with various teams. Do not spend too much time on any one statement. There is no right or wrong answer. Rather you just need to answer based on your own opinion and your feelings. The entire questionnaire should take only about 20 minutes to complete.

Please read each statement carefully and circle a number from 1 to 7 to indicate your level of agreement with each statement.

You are also being asked to fill out the demographic information on the next page, but NOT your name.

Thank you in advance for your cooperation.

Sincerely,

Pete Twist
(604) 736-3930

SUBJECT CONSENT FORM

I (please PRINT) _____ agree to participate in the project titled "Team-Based Attitude: Theory Development, Inventory Construction, and Psychometric Analysis". I understand that my identity will be protected and that I may withdraw at any time without any effect upon my present or future academic and sport involvement.

(Signed)_____

Date _____

DEMOGRAPHIC INFORMATION

Age: ____ Sex: Male ( ) Female ( )

Name of Sport:_____

Level of Play: Varsity ( )
Junior Varsity ( )

Number of Years played on this team: _____

Number of Years played this sport: _____

OTHER ORGANIZED, COMPETITIVE SPORTS PLAYED (OR HAVE PLAYED IN THE PAST):	TOTAL NUMBER OF YEARS PLAYED THIS SPORT:
1._____	_____
2._____	_____
3._____	_____
4._____	_____
5._____	_____
6._____	_____
7._____	_____
8._____	_____

1. If a team is unsuccessful, the athletes must stick together if they hope to start winning.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

2. I value being considered a part of the group whenever team members do anything.

Very Rarely			Sometimes			Very Frequently
1	2	3	4	5	6	7

3. Following practices and games, I get changed and shower quickly, leaving the dressing room as soon as possible.

Very Rarely			Sometimes			Very Frequently
1	2	3	4	5	6	7

4. If it is common behavior for the team to socialize together after competitions, I would willingly join in.

Very Rarely			Sometimes			Very Frequently
1	2	3	4	5	6	7

5. It is important to set team goals for each player to work towards if the team is to be successful.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

6. I participate to have fun and for personal success - but team success is a nice bonus.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

7. With a few top superstars, a team can win even without team work.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

8. It is important for team members to be loyal to the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

9. I really value my membership on a team.

Very Rarely						Very Frequently
			Sometimes			
1	2	3	4	5	6	7

10. I think a team can become stronger as a unit if it spends time together outside the sports environment.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

11. I try to conform to the rules of the team to help it get along as a unit.

Very Rarely						Very Frequently
			Sometimes			
1	2	3	4	5	6	7

12. For the team to be successful, teammates must aspire to the same team performance goals.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

13. Thinking of a team championship helps to motivate me when I'm training during the off-season.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

14. I wouldn't mind being moved to a position where I score less points and receive less recognition if it would help the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

15. Teammates can really help and support one another.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

16. I take pride in my involvement on a team.

Very Rarely						Very Frequently
			Sometimes			
1	2	3	4	5	6	7

17. For me a team is the most important social group I belong to.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

18. Team rules are important to help maintain the team as a group.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

19. It is important for the athlete to work towards team accomplishments.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

20. It is important to me that the team is successful, but it is more important that I do well.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

21. I try to change the way I play to satisfy the coach.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

22. Athletes must organize other interests in their life (school, work, social, etc.) so that they never interfere with their committment and responsibilities with the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

23. I have a strong sense of belonging to my sport teams.

Very Rarely						Very Frequently
			Sometimes			
1	2	3	4	5	6	7

24. A team with individuals who get along well will outperform a team with individuals who argue alot.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

25. A player does not have to agree with team rules, but he should readily accept and abide by them.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

26. A player should direct all of his efforts towards the team's goals.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

27. I get very "high" after wins or team success, and very "down" after losses or team failures.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

28. Everyone on the team has a role to play to help the team win.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

29. I think that initiations which degrade the rookies have a negative effect on the team.

Strongly Disagree						Strongly Agree
1	2	3	Neutral 4	5	6	7

30. I am proud of my membership on teams.

Very Rarely						Very Frequently
1	2	3	Sometimes 4	5	6	7

31. I like to take my time dressing before practices and games and getting changed afterward, to hang around the dressing room for a bit.

Very Rarely						Very Frequently
1	2	3	Sometimes 4	5	6	7

32. Attendance at team breakfasts on the road, dress codes, and punctuality rules (etc.) are important to comply to because they help ensure the team remains strong as a group.

Strongly Disagree						Strongly Agree
1	2	3	Neutral 4	5	6	7

33. It is important for athletes to have individual goals, but they should not interfere with the team's goals.

Strongly Disagree						Strongly Agree
1	2	3	Neutral 4	5	6	7

34. Even if my teammates didn't play well and my team lost, I would be satisfied if I performed really well.

Strongly Disagree						Strongly Agree
1	2	3	Neutral 4	5	6	7

35. I don't have to be pushed to practice or play hard; I give 100 %.

Strongly Disagree						Strongly Agree
1	2	3	Neutral 4	5	6	7

36. The status of veterans and rookies should be separated in the dressing room and on the road until the rookies go through their initiation event.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

37. I think that teams should dress up (ie: wear a tie) on game days.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

38. I try to include team members in my plans for social activities.

Very Rarely			Sometimes			Very Frequently
1	2	3	4	5	6	7

39. If an athlete disagrees with the coach in practice, he should not question the coach until after the practice has ended.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

40. Sometimes it bothers me when working for the team's goals gets in the way of my individual accomplishments.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

41. I am more strongly motivated to reach a new personal best rather than simply achieving group success.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

42. I improve my skills by listening carefully to advice from coaches.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

43. Everyone on the team should take responsibility for any poor performance or loss by the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

44. I like to have team jackets and team clothing so I can be publically identified with the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

45. Team spirit is important to winning.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

46. An athlete's failure to comply to team rules has a negative effect on team cohesion.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

47. Even if I realize my individual goals and excel at my position, the team's goal is usually my main incentive for participating.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

48. A team win is satisfying, but I would be much happier to be recognized individually for my efforts.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

49. I accept team rules and follow them because they are set to facilitate team success.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

50. When things get too tough with the team (ie: a hard driving coach; consistently losing; etc.), I would quit and pursue something more enjoyable.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

51. Team involvement is more satisfying when I have a strong sense of belonging on the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

52. I miss the members of my team when the season ends.

Very Rarely						Very Frequently
			Sometimes			
1	2	3	4	5	6	7

53. In order to maintain his individuality, an athlete should resist social pressures to conform in a team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

54. An athlete's goal setting must include team goals.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

55. Winning in sport is the most important thing even when I play badly.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

56. Athlete's should follow the coach's instructions and practices without argument.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

57. Even if my team was losing all of it's games, I would rather stick with it and try to work out of the slump than move to another team or activity.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

58. I think it is a good idea to have "team houses", where groups of athletes from a team would live together during the competitive season.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

59. Athletes must conform to team demands and rules to remain united and strong as a group.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

60. When one of my teammates makes a mistake in the game, I offer support and encouragement.

Strongly Diasagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

61. Whether a team wins or loses, the team's athletes should go out together after the game.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

62. When my team loses, I try to think of what else I could have done to help make us successful.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

63. No amount of drills and practices will create a "team" - athletes need other activities, and need to hang out together before they can become a "team".

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

64. I am willing to compete when injured if I feel I can still help the team.

Strongly Disagree						Strongly Agree
			Neutral			
1	2	3	4	5	6	7

Appendix D

Consent Letter To Coaches

Mr. Bruce Enns
Basketball Coach
University of British Columbia
6081 University Blvd.
Vancouver, B.C.

Dear Mr. Enns:

A sport-specific study is underway at the University of British Columbia, concerning the development of a valid and reliable team-orientation instrument which measures tendancies towards multidimensional team-based attitudes within interactive, interdependent elite sport groups. This study is undertaken as part of my Masters in Physical Education. I am working with Dr. Robert Schutz, Dr. Sharon Bleuler, and Dr. Richard Mosher (from the Department of Physical Education) and Dr. Susan Butt (from the Psychology Department). I am also a player with the UBC hockey team, which affords me a unique perception - at not only the academic background and theoretical implications, but also the practical application and importance. In a 1987 study, within a list of psychological attributes, coaches from the NHL, CIAU, and Canadian junior leagues consistently rated team-based attitudes a more important discriminator than individual attitudes for the athlete who desires to play within their league.

Pilot testing is being completed with male varsity basketball, hockey, rugby, and volleyball teams from the CWUAA. This is the first step in proving some initial validation so that in the future the Team-Based Attitude Inventory could be used to provide feedback to coaches to optimize the probability of team success, and used by researchers to further the knowledge and understanding of individuals within a team and how these individuals affect group structure and processes.

I am writing to ask for your cooperation in having the questionnaire administered to your team. It is a simple test (please see the sample questions included) which takes only 20 minutes to complete. If you are agreeable to this, a representative from the School of Physical Education and Recreation or the Department of Psychology at your university will be in contact. This person will handle all responsibilities of test administration and collection for you - we seek only your permission to have your athletes complete the questionnaire. Your athletes are not identifiable from the test - complete confidentiality is ensured to all participants.

Can you please complete the reply form and mail it in the envelope provided. Thank you for your time, and thank you in advance for your assistance. The theoretical orientation within group dynamics is directed towards what the basic variables are that determine what happens in groups. Team-based attitude can be viewed as an individual difference variable which affects the level of group cohesion within a team. The development of instruments like the Team-Based Attitude Inventory can provide valuable information about athletes and insight into the group dynamics within a team - not only immediate feedback for coaches, but also helping to build general information to help coaches through coaching certification programs, etc. Thanks again.

Sincerely,

Pete Twist
Graduate Studies
University of BC

The theoretical basis utilized to build a conceptual model includes team norms and team dynamics. Specifically, the components hypothesized to tap team-based attitude include cohesion (team maintenance, team identity, team unity, and cohesive norms) and locomotion (task-orientation, team motivation and aspirations, and locomotive norms).

1. For me, a team is one of the most important social groups I belong to.

2. When my team loses, I try to think of what I could have done differently which may have helped us more.

3. When training I think of a team championship.

4. A player does not have to agree with team rules, but he should readily accept them.

5. Winning in sport is the most important thing even when I play badly.

6. I don't like playing according to a team's system or style if it hinders my individual abilities and performance.

ALL QUESTIONS ARE COMPLETED BY CIRCLING THE ATHLETE'S ANSWER ON A SCALE ANCHORED BY "STRONGLY DISAGREE" AND "STRONGLY AGREE".

SD D NA A SA

REPLY FORM

PLEASE CHECK ONE AND FAX BACK TO THE UBC ATHLETIC DEPARTMENT. If you have any questions, you can write them on the back of this page, or feel free to call me directly at 604-736-3930. You may also contact Dr. R. Schutz, at 604-228-2767.

[ ]	YES	I agree to allow my athletes to complete the Team-Based Attitude Inventory. A representative will contact me, and this representative will handle all of the responsibilities for questionnaire administration, completion, & collection.
[ ]	NO	I am unwilling to allow my athletes to complete the Team-Based Attitude Inventory.

Coach's Name: _____

Sport: _____

Number Of Athletes On Your Team: _____

School: _____

Signature: _____

Appendix E

Initial Contact Letter to School Representatives

Ms. Jan Crook
Ass. Athletic Director
University of Calgary

Dear Jan:

My name is Peter Twist, a Physical Education graduate student at UBC. I am involved in a project which is directed towards developing a team-based attitude inventory that measures group cohesion and task-orientation within athletic teams. Pilot testing with this questionnaire is being completed with male varsity basketball, hockey, rugby, and volleyball teams from the CWUAA. This is the first step in proving some initial validation so that in the future the Team-Based Attitude Inventory could provide feedback to coaches to optimize the probability of success, and used by researchers to further the knowledge and understanding of individuals within a team and how these individuals affect group structure and processes. The building of this general team dynamics information can, for example, be used for education in coaching certification programs.

We are presently involving teams from Alberta, Lethbridge, Saskatchewan, UBC, and Victoria universities, and would like to include University of Calgary in the study. We have received consent from your hockey and volleyball coaches to have their players fill out a questionnaire. We are asking for your assistance in the administration of this questionnaire. As our contact, we would mail you the questionnaires, complete with instructions. The administrative responsibilities include only handing out the questionnaires to the players, and collecting them upon completion. At this point you would mail them back to UBC.

Our major concern is to ensure the individual administering the questionnaire is not directly associated with the team, so that the players are not concerned that their coach will see their answers. Another concern is to ensure the players read and answer the questionnaire seriously. This inventory takes only about 20 minutes to complete, but shouldn't be attempted when the players are in a rush (ie: right after practise in the dressing room).

If you have someone else in mind who could carry out this task, we are agreeable to this being delegated, based on your discretion. Can you please fax a reply if yourself or a delegate can hand out this questionnaire. Thank you in advance for your cooperation. We look forward to your reply so we can prepare a mail out to your university - we would like to complete this during the team's pre-season so we do not interfere with their daily in-season schedule.

Once again, thanks for your assistance.

Regards,

PETER TWIST
Physical Education
Graduate Student
UBC
FAX #604-228-601

Appendix F

Instructions to School Representatives

APPENDIX F

ADMINISTRATION CONCERNS

JIM:

1. Enclosed are questionnaires, to be allocated as follows:

   -rugby: 40
   -volleyball: 15
   -basketball: 15
   -hockey: 25

2. Please ensure that coaches are not present and do not handle the questionnaires - please reaffirm to the athletes to answer honestly (there is no right or wrong answer - it is just their opinion), and that none of the coaches or management will see the results.

3. Please reaffirm that their input is important because it will later be used to educate coaches and therefore better serve the needs of players.

4. It will take about 15 - 20 minutes to complete.

5. Please have them read the instructions (included with the questionnaire) and sign the consent form. Make sure they don't rip out the consent form after signing - it has to stay with the questionnaire until we get it back.

You may want to read over the instructions for the players that is attached to each questionnaire. If you have any questions, please call me at 604-736-3930.

Thanks again for your help. You can return the completed questionnaires in the same box with the address label and postage included.

Regards,

Pete Twist
UBC

Appendix G

Coach Rating Form (Cohesion and Locomotion)

Dear Mr. O'Malley:

Your players have recently completed the Team-Based Attitude Inventory. This questionnaire is being developed to assess athlete's attitudes. The future use of the questionnaire includes team dynamics research, and educational use with coaching certifications.

As an expert coach with an elite level team, you are being asked to take 5 minutes to complete the attached form. This will help validate the questionnaire, an important part of it's development. Please list your veteran players and rate them on a scale from 1 to 10 on two components - Cohesion and Locomotion. These are defined on the form. We would sincerely appreciate your cooperation as it is necessary to validate the questionnaire. We need to compare the questionnaire results to other independent and accurate information - and your own objective analysis of the players is certainly the most valid measure. Veteran players (athletes in their second year (or more) on your team) are suggested because you have had a long enough time, over varied situations, to evaluate and come to know these athletes very well.

For your assurance, players are coded by number - when we receive your completed form, data will be entered into the computer (along with the athlete's questionnaire answers), and the form will be destroyed. This is very important. You can be certain that we are the only ones to have access to the data, it will be kept in the strictest confidence, and data analysis uses coded player references (ie: player # 412), so no player names are retained.

Thank you for allowing your players to complete the questionnaire, and thank you for providing your expert evaluation of veteran players - your input is invaluable in the completion of the Team Based Attitude Inventory.

Should you have any questions, please call Peter Twist at the number listed below. A self-addressed, stamped envelop is included for easy and prompt return of the form.

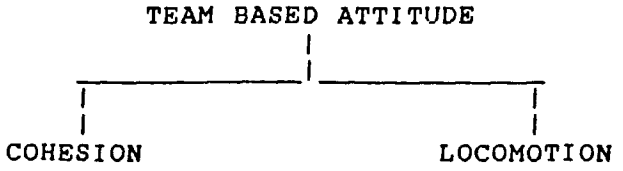
Thanks again.

Sincerely,

Peter Twist 604-736-3930

Dr. R. Schutz 604-228-2767

CONCURRENT VALIDITY - COACH'S EXPERT OBSERVATIONS (vrs. athlete test results)



DEFINITIONS:

COHESION: Social cohesion; friendship, pride in membership; sticking together; helping the team remain strong as a group.

LOCOMOTION: Task cohesion; motivated to direct behavior towards team accomplishments; desire to succeed as a team; puts team's goals above personal goals; teammwork.

PLEASE COMPLETE THE FOLLOWING PORTION (for veteran players - in second year or more on your team).

	PLAYER NAME	COHESION (rate each player on a score from 1 - 10)	LOCOMOTION (rate each player on a score from 1 - 10)
ie:	John Smith	9	10
ie:	Mike Smith	5	4

Please use reverse if additional space required.
Thank you - please return in the envelop provided.

Appendix H

Theoretical Justification For Correlating Errors

CORRELATING MEASUREMENT ERRORS

PAIRS OF ITEMS:	THEORETICAL JUSTIFICATION:
Q2	- joining in and being part of the group outside the sport environment.
Q4	- join in and socialize with the group after competitions.
Q16	- pride in involvement on a team.
Q30	- proud of membership on teams.
Q23	- strong sense of belonging to sport teams.
Q38	- try to include teammates in plans.
Q3	- hanging out in the dressing room after games/practices.
Q31	- hanging out in the dressing room after games/practices.
Q59	- no theoretical
Q25	justification.
Q18	- no theoretical
Q5	justification.
Q11	- no theoretical
Q19	justification.
Q11	- no theoretical
Q42	justification.
Q25	- following team rules without arguement.
Q56	- following team rules without arguement.
Q26	- player should direct all of his efforts towards the team's goals.
Q56	- following team rules without arguement.

Appendix I

Correlation Matrix for 35 Item Inventory

CFA of TBA data -- Model is revised, 35 item 7 factor model.

CORRELATION MATRIX TO BE ANALYZED

	Q1	Q8	Q10	Q15	Q50	Q2	Q9	Q16	Q23	Q30
Q1	1.000									
Q8	0.268	1.000								
Q10	0.212	0.275	1.000							
Q15	0.188	0.290	0.277	1.000						
Q50	0.214	0.340	0.185	0.221	1.000					
Q2	0.274	0.355	0.275	0.344	0.279	1.000				
Q9	0.244	0.510	0.373	0.287	0.391	0.569	1.000			
Q16	0.233	0.398	0.191	0.395	0.276	0.323	0.481	1.000		
Q23	0.251	0.270	0.388	0.241	0.224	0.355	0.381	0.494	1.000	
Q30	0.184	0.265	0.334	0.243	0.198	0.282	0.387	0.544	0.468	1.000
Q3	0.023	0.205	0.075	0.044	0.050	0.213	0.288	0.166	0.243	0.129
Q4	0.067	0.215	0.324	0.071	0.048	0.506	0.408	0.251	0.277	0.263
Q31	0.012	0.144	0.147	-0.011	0.042	0.247	0.275	0.214	0.285	0.227
Q38	-0.016	0.011	0.154	-0.035	-0.032	0.240	0.224	0.112	0.391	0.180
Q52	0.079	0.114	0.288	0.194	0.121	0.393	0.245	0.126	0.320	0.297
Q11	0.266	0.369	0.255	0.377	0.354	0.278	0.465	0.529	0.353	0.452
Q18	0.074	0.307	0.243	0.394	0.243	0.246	0.222	0.307	0.350	0.432
Q25	0.161	0.368	0.192	0.311	0.221	0.148	0.280	0.371	0.314	0.280
Q32	0.114	0.250	0.189	0.278	0.097	0.174	0.209	0.393	0.350	0.334
Q59	0.201	0.403	0.303	0.354	0.241	0.312	0.286	0.351	0.439	0.405
Q5	0.196	0.278	0.177	0.183	0.139	0.171	0.183	0.192	0.144	0.098
Q12	0.243	0.193	0.093	0.209	0.225	0.334	0.193	0.309	0.221	0.347
Q19	0.085	0.361	0.262	0.272	0.184	0.210	0.228	0.291	0.292	0.372
Q26	0.092	0.263	0.139	0.122	0.084	0.174	0.128	0.242	0.368	0.183
Q54	0.140	0.245	0.216	0.234	0.188	0.151	0.187	0.332	0.412	0.293
Q20	-0.014	0.181	-0.015	0.002	0.213	0.034	0.127	0.055	0.146	0.026
Q34	0.044	0.187	0.024	0.054	0.238	0.060	0.145	0.055	0.144	-0.034
Q40	0.042	0.083	-0.014	-0.036	0.159	-0.044	0.082	0.159	0.077	-0.085
Q41	0.039	0.083	-0.036	-0.067	0.002	-0.025	-0.024	-0.053	-0.054	-0.058
Q48	0.048	0.119	0.062	0.117	0.173	0.022	0.083	0.075	0.164	0.010
Q28	-0.004	0.312	0.100	0.192	0.124	0.094	0.020	0.184	0.200	0.165
Q42	0.238	0.188	0.110	0.223	-0.007	0.083	0.178	0.269	0.193	0.298
Q49	0.132	0.337	0.177	0.462	0.192	0.141	0.223	0.351	0.305	0.306
Q56	0.038	0.162	0.087	0.133	0.141	0.140	0.072	0.110	0.140	0.149
Q62	0.168	0.259	0.305	0.213	0.168	0.097	0.178	0.198	0.346	0.235

	Q3	Q4	Q31	Q38	Q52	Q11	Q18	Q25	Q32	Q59
Q3	1.000									
Q4	0.352	1.000								
Q31	0.499	0.448	1.000							
Q38	0.306	0.504	0.319	1.000						
Q52	0.142	0.335	0.351	0.302	1.000					
Q11	0.145	0.130	0.216	0.038	0.164	1.000				
Q18	0.020	0.105	0.199	-0.035	0.265	0.460	1.000			
Q25	0.152	0.092	0.173	0.017	0.117	0.531	0.475	1.000		
Q32	0.000	0.058	0.180	0.085	0.030	0.404	0.426	0.295	1.000	
Q59	0.062	0.150	0.222	0.154	0.211	0.509	0.638	0.392	0.436	1.000
Q5	-0.092	0.087	-0.028	0.059	-0.011	0.288	0.117	0.129	0.319	0.425
Q12	0.078	0.132	0.252	0.013	0.110	0.413	0.515	0.265	0.262	0.593
Q19	0.133	0.219	0.213	0.093	0.217	0.271	0.523	0.293	0.228	0.568
Q26	0.035	0.034	0.051	0.051	0.039	0.340	0.275	0.365	0.307	0.433
Q54	0.191	0.123	0.258	0.235	0.218	0.321	0.250	0.303	0.195	0.418
Q20	0.195	-0.098	0.088	0.113	0.040	0.087	-0.025	0.044	0.007	0.120
Q34	0.244	0.039	0.161	0.057	0.055	0.094	0.105	0.120	-0.083	0.100
Q40	0.095	-0.012	0.101	0.091	-0.064	0.104	0.003	0.011	0.015	0.045
Q41	0.116	-0.027	0.049	0.085	-0.003	-0.003	0.017	-0.002	-0.062	0.047
Q48	0.115	-0.011	0.077	-0.061	-0.081	0.155	0.110	0.110	0.166	0.220
Q28	-0.062	0.001	0.125	0.013	0.123	0.214	0.328	0.349	0.275	0.430
Q42	0.048	0.039	-0.000	0.053	0.006	0.428	0.213	0.354	0.213	0.269
Q49	0.088	0.074	0.157	-0.038	-0.007	0.399	0.505	0.483	0.433	0.534
Q56	0.133	0.021	0.142	-0.019	0.104	0.271	0.323	0.467	0.147	0.307
Q62	-0.031	0.041	0.125	0.017	0.088	0.258	0.269	0.304	0.302	0.396

CORRELATION MATRIX TO BE ANALYZED

	Q5	Q12	Q19	Q26	Q54	Q20	Q34	Q40	Q41	Q48
Q5	1.000									
Q12	0.413	1.000								
Q19	0.419	0.472	1.000							
Q26	0.342	0.341	0.393	1.000						
Q54	0.419	0.293	0.425	0.386	1.000					
Q20	0.075	0.138	0.195	0.129	0.268	1.000				
Q34	0.119	0.193	0.180	0.162	0.276	0.427	1.000			
Q40	0.095	0.098	0.151	0.141	0.281	0.450	0.342	1.000		
Q41	0.051	0.136	0.228	0.080	0.158	0.467	0.362	0.509	1.000	
Q48	0.153	0.148	0.231	0.138	0.269	0.492	0.418	0.409	0.365	1.000
Q28	0.204	0.217	0.349	0.311	0.193	0.088	0.020	-0.051	0.101	0.157
Q42	0.145	0.202	0.155	0.288	0.145	0.033	0.012	0.083	0.148	0.180
Q49	0.244	0.324	0.404	0.374	0.360	0.021	0.215	0.037	0.015	0.211
Q56	0.113	0.288	0.200	0.446	0.181	0.051	0.130	-0.025	-0.036	0.068
Q62	0.161	0.193	0.361	0.313	0.367	0.054	0.148	0.027	-0.014	0.245

	Q28	Q42	Q49	Q56	Q62
Q28	1.000				
Q42	0.198	1.000			
Q49	0.265	0.267	1.000		
Q56	0.289	0.275	0.310	1.000	
Q62	0.277	0.187	0.379	0.182	1.000

Appendix J

CFA Lambda X Factor Loadings for 35 Item Inventory

CFA of TBA data -- Model is revised, 35 item 7 factor model.

LISREL ESTIMATES (MAXIMUM LIKELIHOOD)

LAMBDA X

	MAINT.	IDENTITY	UNITY	COH.NORM	TASK.ORI	MOT.ASP	LOC.NORM
Q1	0.379	0.000	0.000	0.000	0.000	0.000	0.000
Q8	0.623	0.000	0.000	0.000	0.000	0.000	0.000
Q10	0.450	0.000	0.000	0.000	0.000	0.000	0.000
Q15	0.545	0.000	0.000	0.000	0.000	0.000	0.000
Q50	0.475	0.000	0.000	0.000	0.000	0.000	0.000
Q2	0.000	0.645	0.000	0.000	0.000	0.000	0.000
Q9	0.000	0.722	0.000	0.000	0.000	0.000	0.000
Q16	0.000	0.656	0.000	0.000	0.000	0.000	0.000
Q23	0.000	0.641	0.000	0.000	0.000	0.000	0.000
Q30	0.000	0.606	0.000	0.000	0.000	0.000	0.000
Q3	0.000	0.000	0.529	0.000	0.000	0.000	0.000
Q4	0.000	0.000	0.741	0.000	0.000	0.000	0.000
Q31	0.000	0.000	0.636	0.000	0.000	0.000	0.000
Q38	0.000	0.000	0.611	0.000	0.000	0.000	0.000
Q52	0.000	0.000	0.478	0.000	0.000	0.000	0.000
Q11	0.000	0.000	0.000	0.678	0.000	0.000	0.000
Q18	0.000	0.000	0.000	0.713	0.000	0.000	0.000
Q25	0.000	0.000	0.000	0.628	0.000	0.000	0.000
Q32	0.000	0.000	0.000	0.553	0.000	0.000	0.000
Q59	0.000	0.000	0.000	0.802	0.000	0.000	0.000
Q5	0.000	0.000	0.000	0.000	0.533	0.000	0.000
Q12	0.000	0.000	0.000	0.000	0.650	0.000	0.000
Q19	0.000	0.000	0.000	0.000	0.717	0.000	0.000
Q26	0.000	0.000	0.000	0.000	0.590	0.000	0.000
Q54	0.000	0.000	0.000	0.000	0.610	0.000	0.000
Q20	0.000	0.000	0.000	0.000	0.000	0.716	0.000
Q34	0.000	0.000	0.000	0.000	0.000	0.592	0.000
Q40	0.000	0.000	0.000	0.000	0.000	0.654	0.000
Q41	0.000	0.000	0.000	0.000	0.000	0.656	0.000
Q48	0.000	0.000	0.000	0.000	0.000	0.642	0.000
Q28	0.000	0.000	0.000	0.000	0.000	0.000	0.490
Q42	0.000	0.000	0.000	0.000	0.000	0.000	0.405
Q49	0.000	0.000	0.000	0.000	0.000	0.000	0.691
Q56	0.000	0.000	0.000	0.000	0.000	0.000	0.449
Q62	0.000	0.000	0.000	0.000	0.000	0.000	0.493

Appendix K

Inter-Factor Correlations for 35 Item Inventory

PHI

	MAINT.	IDENTITY	UNITY	COH.NORM	TASK.ORI	MOT.ASP	LOC.NORM
MAINT.	1.000						
IDENTITY	0.875	1.000					
UNITY	0.278	0.646	1.000				
COH.NORM	0.753	0.698	0.283	1.000			
TASK.ORI	0.573	0.503	0.216	0.725	1.000		
MOT.ASP	0.192	0.096	0.160	0.138	0.348	1.000	
LOC.NORM	0.654	0.484	0.155	0.948	0.745	0.209	1.000

Appendix L

Modification Indices for 35 Item Inventory

CFA of TBA data -- Model is revised, 35 item 7 factor model.

MODIFICATION INDICES

LAMBDA X

	MAINT.	IDENTITY	UNITY	COH.NORM	TASK.ORI	MOT.ASP	LOC.NORM
Q1	0.000	0.043	0.440	1.448	0.557	0.181	1.282
Q8	0.000	0.040	0.427	0.166	0.917	1.309	0.217
Q10	0.000	8.323	7.099	0.002	0.021	1.431	0.471
Q15	0.000	2.807	2.625	3.261	0.014	2.427	3.162
Q50	0.000	0.805	0.959	2.528	0.403	3.166	1.205
Q2	8.050	0.000	4.417	6.594	2.771	0.709	5.814
Q9	0.335	0.000	0.006	9.788	8.412	0.461	7.317
Q16	7.076	0.000	6.298	3.910	1.910	0.060	3.315
Q23	0.014	0.000	1.079	3.113	4.130	1.479	2.821
Q30	0.526	0.000	0.506	6.778	2.931	2.319	4.642
Q3	0.003	0.174	0.000	0.355	0.023	5.531	0.124
Q4	0.212	0.926	0.000	0.209	1.037	5.649	0.618
Q31	0.001	0.208	0.000	2.237	2.696	1.389	3.225
Q38	3.586	3.843	0.000	2.568	1.086	0.076	2.522
Q52	3.209	4.629	0.000	2.169	0.892	0.509	1.711
Q11	12.860	8.682	0.934	0.000	1.652	0.124	5.212
Q18	2.253	1.271	0.691	0.000	0.441	0.966	0.847
Q25	0.033	0.387	0.173	0.000	3.601	0.085	0.754
Q32	0.051	0.015	0.131	0.000	2.177	0.954	0.666
Q59	3.417	0.741	0.206	0.000	14.708	1.815	0.814
Q5	0.524	1.112	3.680	1.934	0.000	0.670	0.971
Q12	0.071	0.355	0.012	1.974	0.000	1.200	1.100
Q19	0.002	0.248	1.006	0.061	0.000	0.080	0.022
Q26	0.004	1.763	2.777	1.662	0.000	0.575	2.431
Q54	0.197	0.872	3.578	1.589	0.000	5.143	2.579
Q20	0.120	0.236	0.022	0.248	0.329	0.000	0.570
Q34	1.200	1.550	1.687	1.075	1.047	0.000	0.929
Q40	0.505	0.119	0.007	0.903	0.457	0.000	1.237
Q41	5.152	4.010	0.487	2.502	1.223	0.000	1.732
Q48	2.812	0.538	0.500	5.019	2.450	0.000	6.223
Q28	1.665	0.996	0.229	1.210	0.000	0.001	0.000
Q42	1.287	0.434	0.025	0.680	0.097	0.262	0.000
Q49	0.419	0.250	0.002	0.059	0.338	0.071	0.000
Q56	2.747	0.940	0.055	0.158	0.026	0.307	0.000
Q62	0.974	0.437	0.038	0.207	0.816	0.226	0.000

Appendix M

T-values for 35 Item Inventory

CFA of TBA data -- Model is revised, 35 item 7 factor model.

T-VALUES

LAMBDA X

	MAINT.	IDENTITY	UNITY	COH.NORM	TASK.ORI	MOT.ASP	LOC.NORM
Q1	4.469	0.000	0.000	0.000	0.000	0.000	0.000
Q8	7.752	0.000	0.000	0.000	0.000	0.000	0.000
Q10	5.385	0.000	0.000	0.000	0.000	0.000	0.000
Q15	6.657	0.000	0.000	0.000	0.000	0.000	0.000
Q50	5.710	0.000	0.000	0.000	0.000	0.000	0.000
Q2	0.000	8.429	0.000	0.000	0.000	0.000	0.000
Q9	0.000	9.772	0.000	0.000	0.000	0.000	0.000
Q16	0.000	8.624	0.000	0.000	0.000	0.000	0.000
Q23	0.000	8.372	0.000	0.000	0.000	0.000	0.000
Q30	0.000	7.803	0.000	0.000	0.000	0.000	0.000
Q3	0.000	0.000	6.264	0.000	0.000	0.000	0.000
Q4	0.000	0.000	9.372	0.000	0.000	0.000	0.000
Q31	0.000	0.000	7.778	0.000	0.000	0.000	0.000
Q38	0.000	0.000	7.420	0.000	0.000	0.000	0.000
Q52	0.000	0.000	5.577	0.000	0.000	0.000	0.000
Q11	0.000	0.000	0.000	9.138	0.000	0.000	0.000
Q18	0.000	0.000	0.000	9.759	0.000	0.000	0.000
Q25	0.000	0.000	0.000	8.276	0.000	0.000	0.000
Q32	0.000	0.000	0.000	7.083	0.000	0.000	0.000
Q59	0.000	0.000	0.000	11.510	0.000	0.000	0.000
Q5	0.000	0.000	0.000	0.000	6.563	0.000	0.000
Q12	0.000	0.000	0.000	0.000	8.354	0.000	0.000
Q19	0.000	0.000	0.000	0.000	9.466	0.000	0.000
Q26	0.000	0.000	0.000	0.000	7.407	0.000	0.000
Q54	0.000	0.000	0.000	0.000	7.704	0.000	0.000
Q20	0.000	0.000	0.000	0.000	0.000	9.070	0.000
Q34	0.000	0.000	0.000	0.000	0.000	7.188	0.000
Q40	0.000	0.000	0.000	0.000	0.000	8.110	0.000
Q41	0.000	0.000	0.000	0.000	0.000	8.139	0.000
Q48	0.000	0.000	0.000	0.000	0.000	7.927	0.000
Q28	0.000	0.000	0.000	0.000	0.000	0.000	6.014
Q42	0.000	0.000	0.000	0.000	0.000	0.000	4.882
Q49	0.000	0.000	0.000	0.000	0.000	0.000	8.925
Q56	0.000	0.000	0.000	0.000	0.000	0.000	5.458
Q62	0.000	0.000	0.000	0.000	0.000	0.000	6.047

Appendix N

Normalized Residuals for 35 Item Inventory

NORMALIZED RESIDUALS

	Q1	Q8	Q10	Q15	Q50	Q2	Q9	Q16	Q23	Q30
Q1	0.000									
Q8	0.381	0.000								
Q10	0.508	-0.063	-0.000							
Q15	-0.214	-0.577	0.383	-0.000						
Q50	0.416	0.527	-0.344	-0.449	-0.000					
Q2	0.600	-0.150	0.104	0.261	-0.020	0.000				
Q9	-0.084	1.110	0.861	-0.852	0.899	1.162	-0.000			
Q16	0.063	0.264	-0.947	0.788	-0.110	-1.140	0.074	-0.000		
Q23	0.346	-1.109	1.451	-0.929	-0.652	-0.660	-0.922	0.825	0.000	
Q30	-0.559	-0.950	1.007	-0.704	-0.782	-1.251	-0.566	1.678	0.909	0.000
Q3	-0.478	1.270	0.018	-0.549	-0.338	-0.153	0.424	-0.769	0.215	-1.005
Q4	-0.237	0.894	2.711	-0.650	-0.736	2.234	0.629	-0.836	-0.442	-0.399
Q31	-0.768	0.266	0.719	-1.445	-0.622	-0.286	-0.345	-0.736	0.181	-0.338
Q38	-1.075	-1.299	0.844	-1.694	-1.497	-0.247	-0.805	-1.834	1.566	-0.785
Q52	0.289	0.279	2.697	1.393	0.626	2.280	0.197	-0.991	1.415	1.272
Q11	0.734	0.365	0.130	0.960	1.154	-0.438	1.305	2.444	0.466	1.837
Q18	-1.711	-0.555	-0.165	0.977	-0.330	-0.999	-1.724	-0.356	0.242	1.420
Q25	-0.360	0.649	-0.411	0.439	-0.209	-1.719	-0.543	0.877	0.277	0.068
Q32	-0.645	-0.307	-0.120	0.420	-1.389	-0.991	-0.926	1.571	1.125	1.105
Q59	-0.502	0.034	0.168	0.051	-0.744	-0.695	-1.496	-0.321	0.792	0.642
Q5	0.830	0.807	0.300	-0.025	-0.273	-0.375	-0.519	-0.167	-0.688	-1.118
Q12	1.051	-0.774	-1.137	-0.195	0.339	1.053	-0.985	0.894	-0.283	1.392
Q19	-1.062	0.914	0.685	0.285	-0.398	-0.733	-0.894	0.179	0.258	1.395
Q26	-0.815	0.342	-0.372	-1.003	-1.385	-0.601	-1.483	0.178	1.756	-0.326
Q54	-0.080	0.036	0.498	0.270	0.048	-0.953	-0.856	1.167	2.187	0.917
Q20	-0.880	1.058	-1.023	-0.988	1.737	-0.214	0.857	0.035	1.171	-0.269
Q34	-0.039	1.338	-0.407	-0.184	2.191	0.212	1.203	0.146	1.252	-0.910
Q40	-0.134	-0.292	-0.940	-1.371	1.142	-1.122	0.363	1.366	0.374	-1.585
Q41	-0.184	-0.050	-1.213	-1.752	-0.793	-0.890	-0.948	-1.238	-1.238	-1.239
Q48	-0.045	0.412	0.003	0.519	1.329	-0.299	0.392	0.346	1.454	-0.408
Q28	-1.756	0.975	-0.811	-0.111	-0.626	-0.963	-2.108	0.089	0.334	0.028
Q42	1.500	-0.025	-0.333	0.881	-1.852	-0.735	0.191	1.505	0.818	1.993
Q49	-0.789	0.142	-0.894	2.107	-0.866	-1.243	-0.598	1.218	0.740	0.914
Q56	-1.109	-0.594	-1.040	-0.628	-0.245	-0.223	-1.290	-0.832	-0.224	-0.010
Q62	0.331	0.332	1.869	0.130	-0.098	-0.938	-0.226	0.226	2.095	0.872

NORMALIZED RESIDUALS

	Q3	Q4	Q31	Q38	Q52	Q11	Q18	Q25	Q32	Q59
Q3	0.000									
Q4	-0.459	-0.000								
Q31	1.901	-0.278	0.000							
Q38	-0.205	0.569	-0.795	0.000						
Q52	-1.327	-0.217	0.558	0.116	-0.000					
Q11	0.532	-0.154	1.143	-0.972	0.884	-0.000				
Q18	-1.063	-0.546	0.868	-1.941	2.070	-0.257	-0.000			
Q25	0.710	-0.489	0.736	-1.124	0.391	1.197	0.312	-0.000		
Q32	-1.018	-0.718	0.741	-0.128	-0.556	0.342	0.369	-0.606	-0.000	
Q59	-0.713	-0.224	0.948	0.184	1.257	-0.379	0.693	-1.227	-0.084	-0.000
Q5	-2.198	-0.435	-1.807	-0.516	-1.102	-0.210	-2.399	-1.827	0.837	0.731
Q12	-0.352	-0.209	1.510	-1.343	0.175	0.463	1.416	-0.936	-0.500	1.713
Q19	0.185	0.868	0.881	-0.520	1.358	-1.598	1.029	-1.004	-1.280	0.912
Q26	-0.763	-1.235	-0.795	-0.750	-0.595	0.021	-0.941	0.606	0.365	0.373
Q54	1.122	-0.210	1.665	1.467	1.570	-0.331	-1.353	-0.236	-1.069	0.051
Q20	1.920	-1.860	0.485	0.842	0.059	0.188	-1.228	-0.274	-0.636	0.431
Q34	2.610	-0.077	1.509	0.238	0.318	0.425	0.530	0.807	-1.371	0.372
Q40	0.726	-0.758	0.719	0.616	-1.191	0.471	-0.809	-0.611	-0.467	-0.401
Q41	0.985	-0.948	0.071	0.291	-0.431	-0.841	-0.641	-0.779	-1.425	-0.380
Q48	0.986	-0.742	0.426	-1.255	-1.144	1.116	0.528	0.619	1.400	1.774
Q28	-1.237	-0.657	0.960	-0.389	1.086	-1.307	-0.192	0.564	0.109	0.512
Q42	0.192	-0.068	-0.479	0.198	-0.288	1.893	-0.827	1.257	-0.075	-0.581
Q49	0.411	-0.034	1.123	-1.245	-0.689	-0.677	0.258	0.660	0.674	-0.101
Q56	1.208	-0.360	1.219	-0.737	0.888	-0.326	0.113	2.264	-1.154	-0.535
Q62	-0.859	-0.172	0.958	-0.339	0.855	-0.812	-0.871	0.007	0.422	0.101

NORMALIZED RESIDUALS

	Q5	Q12	Q19	Q26	Q54	Q20	Q34	Q40	Q41	Q48
Q5	-0.000									
Q12	0.787	-0.000								
Q19	0.420	0.066	-0.000							
Q26	0.324	-0.489	-0.344	0.000						
Q54	1.097	-1.183	-0.139	0.304	0.000					
Q20	-0.959	-0.602	-0.142	-0.506	1.120	-0.000				
Q34	-0.108	0.462	0.105	0.252	1.590	0.027	-0.000			
Q40	-0.557	-0.890	-0.466	-0.178	1.463	-0.209	-0.522	-0.000		
Q41	-1.103	-0.435	0.489	-0.923	-0.038	-0.036	-0.302	0.906	0.000	
Q48	0.177	-0.269	0.551	-0.179	1.358	0.355	0.433	-0.129	-0.639	0.000
Q28	-0.152	-0.563	0.892	0.855	-0.648	0.169	-0.509	-1.466	0.403	1.112
Q42	-0.408	-0.189	-1.025	1.065	-0.722	-0.357	-0.480	0.332	1.107	1.541
Q49	-0.720	-0.559	-0.066	0.425	0.134	-1.027	1.570	-0.720	-0.993	1.437
Q56	-1.028	0.554	-0.797	2.732	-0.545	-0.215	0.906	-1.074	-1.210	0.060
Q62	-0.875	-0.857	0.819	0.870	1.424	-0.260	1.029	-0.511	-1.018	2.185

NORMALIZED RESIDUALS

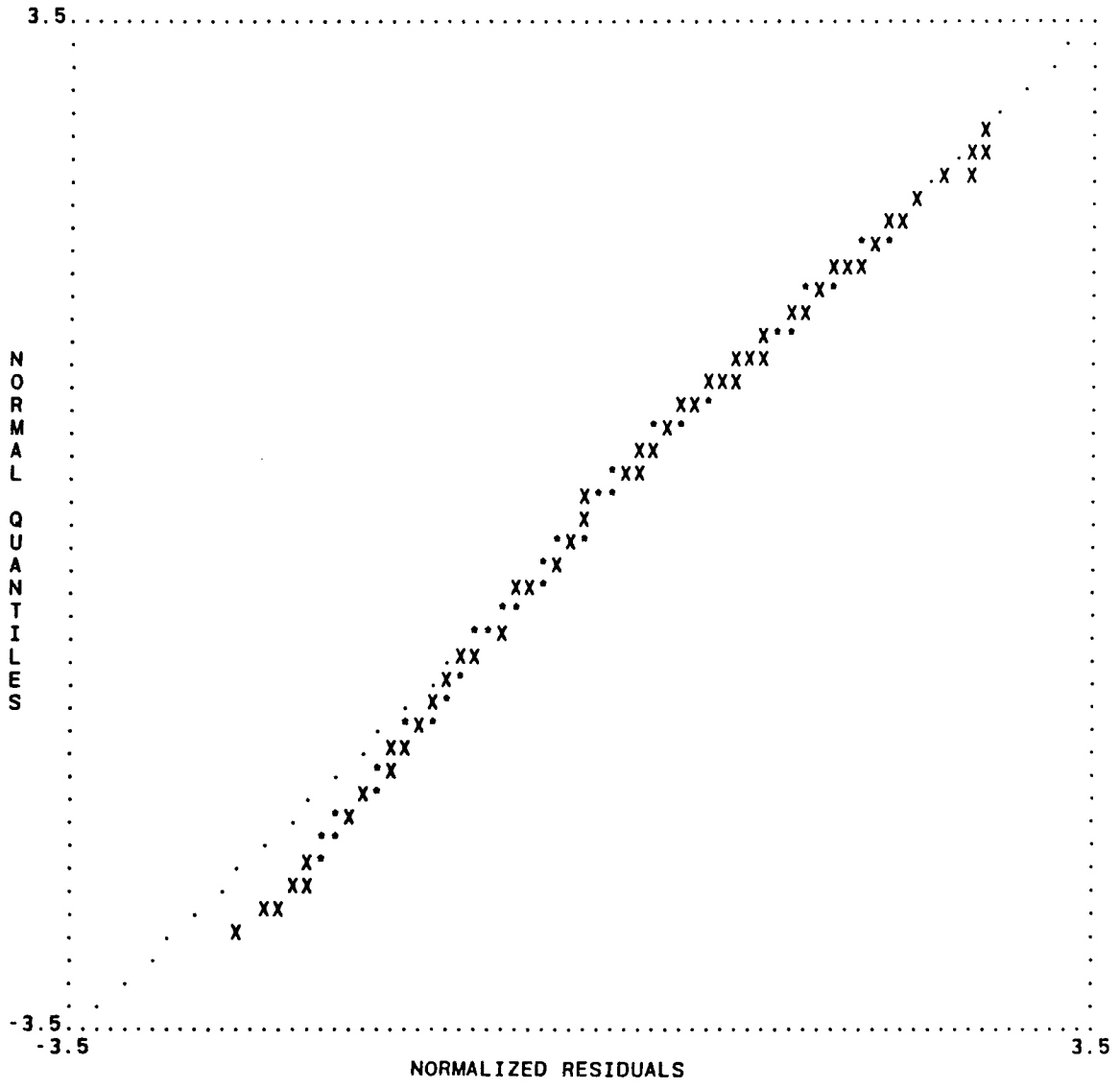
	Q28	Q42	Q49	Q56	Q62
Q28	-0.000				
Q42	-0.038	0.000			
Q49	-0.868	-0.157	-0.000		
Q56	0.832	1.131	-0.003	-0.000	
Q62	0.428	-0.155	0.450	-0.710	0.000

Appendix O

QPLOT of Normalized Residuals

CFA of TBA data -- Model is revised, 35 item 7 factor model.

QPLOT OF NORMALIZED RESIDUALS



Appendix P

Internal Consistency Analysis

R E L I A B I L I T Y A N A L Y S I S - S C A L E (T M)

		MEAN	STD DEV	CASES
1.	Q1	6.1961	1.4238	153.0
2.	Q8	6.3987	.6915	153.0
3.	Q15	6.3856	.7705	153.0
4.	Q10	6.1111	.9072	153.0
5.	Q50	6.0850	1.1973	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q1	24.9804	5.7430	.3251	.1115	.5606
Q8	24.7778	7.7661	.4526	.2131	.4959
Q15	24.7908	7.8770	.3509	.1435	.5273
Q10	25.0654	7.4825	.3390	.1357	.5257
Q50	25.0915	6.4521	.3457	.1480	.5228

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .5798 STANDARDIZED ITEM ALPHA = .6213

R E L I A B I L I T Y A N A L Y S I S - S C A L E (T I)

		MEAN	STD DEV	CASES
1.	Q2	5.7190	1.1554	153.0
2.	Q9	6.1373	.8890	153.0
3.	Q16	6.2876	.8003	153.0
4.	Q23	5.9216	.9071	153.0
5.	Q30	6.2614	.7928	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q2	24.6078	6.8057	.5023	.3469	.7687
Q9	24.1895	7.3652	.6245	.4327	.7130
Q16	24.0392	7.8406	.5997	.4239	.7251
Q23	24.4052	7.5979	.5496	.3332	.7377
Q30	24.0654	8.1141	.5371	.3594	.7437

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .7780 STANDARDIZED ITEM ALPHA = .7893

RELIABILITY ANALYSIS - SCALE (TU)

		MEAN	STD DEV	CASES
1.	Q3	5.0588	1.4565	153.0
2.	Q4	6.0980	1.1048	153.0
3.	Q31	5.1830	1.3786	153.0
4.	Q38	5.5817	1.2805	153.0
5.	Q52	5.2418	1.2671	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q3	22.1046	13.4232	.4501	.2876	.7010
Q4	21.0654	14.2720	.5817	.3652	.6544
Q31	21.9804	12.7299	.5812	.3746	.6434
Q38	21.5817	14.0344	.4872	.2918	.6827
Q52	21.9216	15.0728	.3730	.1873	.7245

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .7286 STANDARDIZED ITEM ALPHA = .7340

RELIABILITY ANALYSIS - SCALE (CN)

		MEAN	STD DEV	CASES
1.	Q11	5.8431	1.0706	153.0
2.	Q18	5.6013	1.2478	153.0
3.	Q25	5.8039	1.0327	153.0
4.	Q32	5.8824	1.1118	153.0
5.	Q59	5.5556	1.0188	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q11	22.8431	11.4094	.6190	.4132	.7610
Q18	23.0850	10.2230	.6582	.4829	.7481
Q25	22.8824	12.0650	.5437	.3498	.7833
Q32	22.8039	11.9876	.4947	.2583	.7986
Q59	23.1307	11.4565	.6580	.4788	.7507

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .8064 STANDARDIZED ITEM ALPHA = .8076

R E L I A B I L I T Y A N A L Y S I S - S C A L E (T O)

		MEAN	STD DEV	CASES
1.	Q5	6.1895	.9716	153.0
2.	Q12	6.0392	.9657	153.0
3.	Q19	6.2418	.7436	153.0
4.	Q26	5.5425	1.1920	153.0
5.	Q54	6.1895	.8331	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q5	24.0131	7.5261	.5346	.3007	.6954
Q12	24.1634	7.6771	.5065	.2940	.7060
Q19	23.9608	8.2616	.5862	.3553	.6891
Q26	24.6601	6.8574	.4873	.2447	.7259
Q54	24.0131	8.1840	.5124	.2853	.7060

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .7482 STANDARDIZED ITEM ALPHA = .7619

RELIABILITY ANALYSIS - SCALE (TMA)

		MEAN	STD DEV	CASES
1.	Q20	4.6536	1.5318	153.0
2.	Q34	4.3725	1.4367	153.0
3.	Q40	4.9804	1.3930	153.0
4.	Q41	4.3464	1.5949	153.0
5.	Q48	4.9281	1.5564	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q20	18.6275	19.7221	.6192	.3857	.7269
Q34	18.9085	21.6495	.5070	.2647	.7635
Q40	18.3007	21.2248	.5709	.3462	.7443
Q41	18.9346	19.9299	.5631	.3474	.7464
Q48	18.3529	20.2693	.5566	.3265	.7482

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .7861 STANDARDIZED ITEM ALPHA = .7865

RELIABILITY ANALYSIS - SCALE (LN)

		MEAN	STD DEV	CASES
1.	Q28	6.4575	.8884	153.0
2.	Q42	5.5033	1.2780	153.0
3.	Q49	5.7386	1.0436	153.0
4.	Q56	4.8301	1.6091	153.0
5.	Q62	6.0000	.8811	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q28	22.0719	10.5540	.3806	.1551	.5642
Q42	23.0261	9.1967	.3497	.1242	.5730
Q49	22.7908	9.5086	.4572	.2355	.5217
Q56	23.6993	7.4880	.3932	.1723	.5698
Q62	22.5294	10.7508	.3484	.1817	.5767

RELIABILITY COEFFICIENTS 5 ITEMS

ALPHA = .6151 STANDARDIZED ITEM ALPHA = .6383

R E L I A B I L I T Y A N A L Y S I S - S C A L E (T B A)

		MEAN	STD DEV	CASES
1.	TM	31.1765	3.1604	153.0
2.	TI	30.3268	3.3420	153.0
3.	TU	27.1634	4.5109	153.0
4.	CN	28.6863	4.1270	153.0
5.	OO	30.2026	3.3646	153.0
6.	TMA	23.2810	5.5220	153.0
7.	LN	28.5294	3.6797	153.0

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
TM	168.1895	256.0099	.5320	.4444	.7130
TI	169.0392	241.9458	.6414	.6188	.6905
TU	172.2026	254.7021	.3108	.3064	.7593
CN	170.6797	222.1007	.6558	.6379	.6767
OO	169.1634	241.6244	.6391	.4806	.6906
TMA	176.0850	253.2756	.2050	.1219	.8049
LN	170.8366	243.2297	.5492	.5082	.7049

RELIABILITY COEFFICIENTS 7 ITEMS

ALPHA = .7512 STANDARDIZED ITEM ALPHA = .7890