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THE RELATIONSHIPS OF SELECTED PSYCHO-SOCIAL VARIABLES ASSOCIATED WITH ACHIEVEMENT TO THE PERFORMANCE OF MALE AND FEMALE INTERCOLLEGIATE BASKETBALL PLAYERS

The University of North Carolina at Greensboro ED.D. 1982

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THE RELATIONSHIPS OF SELECTED PSYCHO-SOCIAL VARIABLES ASSOCIATED WITH ACHIEVEMENT TO THE PERFORMANCE OF MALE AND FEMALE INTERCOLLEGIATE BASKETBALL PLAYERS

by

James E. Lidstone

A Dissertation Submitted to
the Faculty of the Graduate School at
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Approved by

Dissertation Adviser

APPROVAL PAGE

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Date of Acceptance by Committee

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LIDSTONE, JAMES E. The Relationships of Selected Psycho-Social Variables Associated with Achievement to the Performance of Male and Female Intercollegiate Basketball Players. (1982)
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A total of 54 male and 53 female athletes completed the Work and Family Orientation Questionnaire and Gordon's Survey of Interpersonal Values. Scales measured were WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP.

The head coach of each participating team ranked all team members from "most valuable" to "least valuable" based on 1981-82 performance. Also, 13 skill-related indices were obtained for each player from 1981-82 cumulative statistics: (a) percentage of games played, (b) field goals made, (c) field goals attempted, (d) field goal percentage, (e) free throws made, (f) free throws attempted, (g) free throw percentage, (h) total rebounds, (i) rebounds per game, (j) total points, (k) points per game, (l) total assists, and (m) assists per game.

Comparison between males and females utilized two-sample T-tests for the psycho-social variables. Stepwise multiple regression analysis was employed to examine relationships among the variables. Separate analyses were conducted for males, females, and the combined sample. Findings were as follows:

1. A significant difference was observed between

male and female athletes on only two of the ten psycho-social variables, SUPPORT and CONFORMITY. Female athletes obtained higher SUPPORT scores and lower CONFORMITY scores.

2. For males, SUPPORT, BENEVOLENCE, RECOGNITION, PERSONAL UNCONCERN, and WORK accounted for 20.1% of the variability in the regression analysis. For females, BENEVOLENCE, COMPETITIVENESS, RECOGNITION, SUPPORT, WORK, and CONFORMITY explained 24.7% of the variability in the dependent variable.

3. Concerning MVP, points per game, assists per game, rebounds per game, field goals attempted, WORK, RECOGNITION, field goals made, percentage of games played, SUPPORT, free throw percentage, and PERSONAL UNCONCERN explained 87.2% of the variability for males. For females, points per game, assists per game, MASTERY, PERSONAL UNCONCERN, percentage of games played, and field goals made accounted for 74.9% of the variability.

It was concluded that, with respect to achievement motivation and interpersonal values, (a) male and female athletes are more similar than different, and (b) athletic performance as signified by MVP ranking cannot be predicted satisfactorily utilizing psycho-social variables alone.

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My sincere appreciation is extended to Dr. Pearl Berlin for her invaluable assistance in the planning and preparation of this dissertation. My gratitude is also expressed to Dr. Gail Hennis, Dr. Wayne Ladd, and Dr. William Powers for their assistance in the preparation of this report and throughout my course of study.

The research would not have been possible without the cooperation of the athletic directors, coaches, and athletes who gave so freely of their time to participate in this investigation. To those individuals, I am most grateful.

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CHAPTER I

INTRODUCTION

In a meritocratic society, success supposedly goes to those who work the hardest and make it to the top. At the root of such a philosophy is the inherent belief that all members have an equal opportunity to reap the rewards which accrue to those that persevere in their efforts. It was not always this way. At the turn of the century, Western society was predominantly class-dominated. Rewards were not "achieved;" rather they were inherited or passed down within the aristocratic familial structure (Veblen, 1899). Although, to a large extent, this pattern of differential access still exists, we have moved more toward an "achieving" society (McClelland, 1961). As Webb (1969) noted,

> In the transition from communal - agrarian to urban industrialized society, "achievement" criteria are presumed to replace "ascription" ones as a basis for the allocation of positions and distribution of rewards. The urban industrialized society, based as it is on technological knowledge and a consequent division of labor, presumably requires a distribution of roles, at least in the economic and political institutions, based on the qualifications of training and ability and not necessarily on family background. "To the swift go the prize," goes the saying indicating not only the constant connection between sport and the economy, but the emphasis on individual differences in ability, training, and desire, and their consequences for influencing excellence presumably rewarded in a free competitive atmosphere (p. 161).

"To the swift goes the prize." Tunis (1941) has said that whoever wishes to know the mind and heart of America had better know baseball. This statement could safely be extended to all sports, for, as Hoch (1972) noted, sport is essentially a mirror of American life. Within the context of sport are all of the beliefs, values, and attitudes which are held sacred.

In a perceptive and prophetic statement, Tunis (1930) had this to say:

> The American attitude toward athletics is simply a part of the general attitude toward life in this country, the belief that civilization consists chiefly in building bigger and better Buicks (p. 729).

This statement reflects the essence of the achievement-oriented corporate structure of sport in this country and there is no better testimony to it than the current National Football League (NFL) labor negotiations. The players and owners are presently at odds over the issue of who will control the distribution of salaries. The owners wish to retain the right to negotiate with players individually and reward them in the traditional manner, that is, according to their performance and perceived value. On the other hand, in a move which is unprecedented and which has definite Marxist overtones, the players wish to obtain the right to distribute a pool of money in terms of a wage scale which rewards players according to position and seniority. The owners argue that such a plan is

"un-American" and would eliminate the incentive for the players to excel and thus to determine their individual rather than collective worth.

Incentive, achievement, and reward are the essence of the capitalistic system. If an individual is not rewarded for excellence, then why excel? The fact that the NFL players' proposal goes against these basic American values is the very reason that the writer feels the players will be unsuccessful in their bid.

Although the system of rewards varies slightly from the professional to the collegiate ranks, players are still rewarded according to individual achievement. Instead of "All-Pro," collegians are awarded the status of "All-American." Those who are not fortunate enough to achieve this lofty status may yet be declared "All-Star," "All-League," "All-Conference," "All-State," "All-City," "All-Tournament," and so on. In one year, Michener (1976) noted that as many as five hundred college football players achieved the designation "All-American" from one source or another. If more than one source identifies a player as All-American he becomes a "Consensus All-American," and if more than two sources nominate him, he becomes "Everbody's All-American" (Michener, 1976).

While this system has clearly cheapened such designations, it serves to illustrate the reward structure of sport. "To the swift goes the prize." Rewards are

accrued based on performance. An observable hierarchy exists within the team structure as well. Initially, team selection is based on skill and performance. Following selection, players who perform well are rewarded with playing time and thus status and recognition from the athletic community. At season's end, outstanding achievement on a team is recognized by according the individual the status of "Most Valuable Player."

What constitutes athletic performance? Singer (1980) has said that, "athletic accomplishments can be attributed to many factors working together in an ideal 'intermix'" (p. 40). He goes on to say,

> Physical characteristics, sense accuity, perceptual and decision making processes, acquired skills, and developed abilities structure the human system for competition. The optimal state of arrousal encourages the structure to function in a desirable way (Singer, 1980, p. 40).

Presumably, apart from certain genetic physiological differences, all individuals begin at the same point with respect to skill acquisition. It is the social environment to which the individual is exposed that provides the opportunity for participation, sanctions involvement, and thus shapes the will and desire of the individual to acquire and perfect the skills necessary for athletic performance. Thus, any examination of athletic behavior is incomplete that does not seek to incorporate the social, psychological, and physical aspects.

Athletic performance is an elusive concept and its component parts are difficult to identify. Presumably, if it is possible to identify and measure the contributing factors which constitute athletic achievement, then, given this information, it should be possible to predict those who will or will not achieve in the athletic setting. It is hoped that this research will provide some insight into the relative role of selected values and achievement-related variables to the selection of most valuable player among male and female collegiate basketball players.

Statement of the Problem

An important test of whether or not we have an understanding of a certain behavior is our ability to predict the occurrance of that behavior from its component variables. The purpose of this investigation is to examine what influence, if any, the variables WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP as measured by the Work and Family Questionnaire (Helmreich & Spence, (1978) and Gordon's Survey of Interpersonal Values, (1976) have on the perceived athletic performance of male and female intercollegiate basketball players as signified by the coach's Most Valuable Player ranking.

More specifically, the fundamental question addressed in this study is, "are the variables under investigation adequate predictors of the way in which a player will

be ranked by the head coach according to his or her value to the team?" In addition, the research seeks to determine whether a difference exists between male intercollegiate basketball players and female intercollegiate basketball players on the variables WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP.

Statistical Hypotheses

The broad research question to be addressed in this study is, "can perceived athletic performance as signified by the coach's Most Valuable Player ranking be predicted, using stepwise multiple regression analysis, from scores obtained using the Work and Family Orientation Questionnaire and Gordon's Survey of Interpersonal Values, for the variables WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP?" In addition, the research seeks to determine whether male collegiate basketball players and female collegiate basketball players differ on scores obtained for the variables under investigation. The specific research hypotheses to be tested are as follows:

1. WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP are not significant predictors of perceived athletic performance as signified by the coach's Most Valuable Player ranking for male collegiate basketball players.

2. WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP are not significant predictors of perceived athletic performance as signified by the coach's Most Valuable Player ranking for female college basketball players.

3. There is no significant difference between male intercollegiate basketball players and female intercollegiate basketball players on the variables WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP.

Assumptions

For the purposes of this study, it is acknowledged that the following assumptions underlie the research:

1. The psychological tests which generate the data for the study are valid measures of the constructs under investigation.

2. The psychological tests are valid for use in the collegiate athletic environment.

3. The testing instruments are consistent and reliable for the characteristics of race and sex.

4. Scores obtained for the variables measured by the psychological tests are valid indices of the way in which an individual will behave.

5. Coaches are able to give an objective and unbiased ranking of their players with respect to the concept of MVP.

6. The dependent measure, coach's Most Valuable Player ranking, is a valid index of a player's worth to his or her team.

Definition of Terms

Intercollegiate Basketball Players - Male and female athletes participating in the sport of basketball for their respective NCAA Division III, NAIA, or AIAW affiliated schools in and around the Piedmont region of North Carolina and southern Virginia.

Most Valuable Player - The player designated by the head coach as having the greatest worth or value to the team over the course of the 1981-82 college basketball season.

WORK - Having a positive attitude toward work; the desire to work hard and keep busy (Helmreich & Spence, 1978).

MASTERY - Exhibiting a preference for difficult, challenging tasks (Helmreich & Spence, 1978).

COMPETITIVENESS - Concerns the desire to best others, to be successful in interpersonal situations (Helmreich & Spence, 1978).

PERSONAL UNCONCERN - Conceptually similar to fear of success; a high score indicates a lack of concern with the negative reaction of others to personal achievement (Helmreich & Spence, 1978).

SUPPORT - Being treated with understanding, receiving encouragement from other people, being treated with kindness and consideration (Gordon, 1976).

CONFORMITY - Doing what is socially correct, following regulations closely, doing what is accepted and proper, being a conformist (Gordon, 1976).

RECOGNITION - Being looked up to and admired, being considered important, attracting favorable notice, achieving recognition (Gordon, 1976).

INDEPENDENCE - Having the right to do whatever one wants to do, being free to make one's own decisions, being able to do things one's own way (Gordon, 1976).

BENEVOLENCE - Doing things for other people, sharing with others, helping the unfortunate, being generous (Gordon, 1976).

LEADERSHIP - Being in charge of other people, having authority over others, being in a position of leadership or power (Gordon, 1976).

Significance of the Study

As important as competitive athletics is in our culture, relatively little is known about athlete behavior as it relates to athletic performance. As physical educators and coaches we know little about what constitutes one of the the most significant phenomenon in our domain. The present study represents an attempt to add to the body of knowledge

which encompasses athletic behavior. It is significant for a number of reasons.

First, it examines a population of athletes which are seldom studied, yet, which constitute the vast majority of college athletes in this country. These athletes are primarily from small colleges affiliated with NAIA, AIAW, or NCAA, Division III.

Second, the study addresses sex differences between athletes as they pertain to achievement motivation and interpersonal values. Few can argue that societal attitudes are changing with respect to the involvement of women in traditionally male-dominated activities. The sport experience for women is, for all intents and purposes, identical to that for men. Gender similarities and differences relative to behavior characteristics have not been extensively studied. Given the recent growth in women's sports, such investigation is timely.

Morgan (1979) has noted that athletes seemingly lacking in physical skills can achieve high levels of performance as a result of psychological factors. This is a common assumption yet we know very little about the composition of these factors or the magnitude of the role that they play in the athletic experience. This study focuses on ten psycho-social variables related to achievement motivation and interpersonal values and attempts to ascertain their relative importance to the competitive sport experience.

Singer (1980) recognized the complexity of the phenomenon of athletic performance. It is a multi-dimensional construct comprised of any number of sociological, psychological, physiological, and skill-related variables operating in concert. To the knowledge of the investigator, no researchers have ventured outside of a single domain in an effort to explain this complex behavior. The study at hand is unique in that it attempts to view the phenomenon of athletic performance as an integrated and intricate combination of psycho-social and skill-related factors.

Finally, the investigation utilizes a widely used yet misunderstood concept as the dependent variable. The construct of Most Valuable Player is a loosely defined, human-oriented creation designed to identify and reward outstanding athletic performance. Although ten individuals would yield ten different definitions of MVP, it is commonly thought to combine physiological and psychological factors with skill-related variables. It is widely used in all levels and forms of sport. All that is clear about the concept of MVP is that the same criteria for its determination are seldom applied in successive situations. It is the hope of the investigator that this research will shed some light on this abstract creation.

CHAPTER II

RELATED BACKGROUND INFORMATION

The following chapter is devoted to a general discussion of the collegiate sport experience. It is not intended to be an exhaustive and monotonous reporting of all the systematic study that has been conducted in the past half century. Because of the methodological weaknesses and diverse nature of much of the research, to review such studies would be counterproductive. Rather, this section contains the writer's perceptions of the collegiate sport experience gained through the examination of selected literature. It reflects primarily major writing and research conducted in the past fifteen years.

The Collegiate Athlete Today

Much of the current literature depicting the collegiate sport experience is devoted almost exclusively to what is commonly termed "big-time" college athletics (Michener, 1976). More specifically, these discussions are generally centered around the problems inherent in college sports and primarily in football and basketball for men. In a section of their book discussing sport in American education, Eitzen and Sage (1978) systematically address the concerns of cheating,

recruiting, hypocrisy, dehumanization, authoritarian leadership, and the "big business" posture which college sport has adopted. Much of what is said in the literature is irrefutable. The existence and extent of these problems are well documented in the current sociological and popular literature (Coakley, 1978; Edwards, 1973; Eitzen & Sage, 1978; Hanford, 1974; Hoch, 1972; Meggyessey, 1971; Michener, 1976; Scott, 1970; Shaw, 1972). The accounts provide accurate descriptions of what occurs within a rather small, albeit highly visible realm of collegiate athletics. However, the question raised is, "do these accounts of football and basketball as played by men at the NCAA Division I level accurately depict the state of college sport in this country today?"

In 1973 the National Collegiate Athletic Association voted to subdivide itself into three divisions. A further separation within Division I occurred in 1978 for football; major colleges opted to play either in Division I-A or Division I-AA.[1] This may have been an internal power issue within the NCAA, the intent of which was to create an elite division of major football powers.

At the present time the NCAA is comprised of approximately 900 institutions, 787 of which have made a committment to one of three divisions. Of that number, only 277 or 35.2% are members of NCAA Division I. The remaining 510 are organized

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[1] At this time 97 institutions are Division I-A and 92 have declared themselves to be Division I-AA.

into Division II (204) and Division III (306). The National Association of Intercollegiate Athletics (NAIA) consists of 515 members although some of these belong to NCAA as well. The NAIA can be equated roughly with NCAA Divisions II and III in terms of the emphasis placed on athletics and the relative skill level of the athletes. Thus, the typical college athlete is not the one who is seen on television each weekend or reported in the sports pages each morning, nor is he or she central to the majority of the current writing and research.

While the motives to participate may be somewhat different for Division I athletes as they relate to intensive recruiting, "full-ride" grants-in-aid, and the lure of professional sports, the competitive experience and system of rewards remain essentially the same across the different divisions. For NAIA and NCAA Division II and III schools, athletes are recruited (although considerably more of them select their schools than are selected), games are won and lost, and national champions are crowned. These players participate with the same fervor and intensity as their Division I counterparts, yet very little is known about this segment of athletes who comprise the majority of male and female college players. It is hoped that this investigation will shed some light on the behavior patterns of these individuals.

Male and Female Athletes -- Is it Necessary to Differentiate?

Just as the large percentage of research is devoted to the "big-time" college athlete, there is an equally appalling disparity between the research and writing directed to male in contrast to female athletes. Most textbooks devoted to the sociological and psychological aspects of sport go to great lengths to describe the sport experience and the behavior of its participants. Then, almost as an afterthought, these texts devote a chapter to the female athlete as though she were a curiosity to be reckoned with separately (Eitzen & Sage, 1978; Michener, 1976; Straub, 1978).

Competitive sport for women has been a part of the college setting since the 1860s. However, as noted by Gerber, (1974), "historians have generally dismissed collegiate sport for women as if it did not exist" (p. 56). The reasons for this are allied to the attitudes of some of the most prominent physical educators of the respective times. In 1903 Lucille Eaton Hill, Director of Physical Training at Wellesley College, cautioned that, "fiercely competitive athletics have their dangers for men, but they develop manly strength. For women their dangers are greater, and the qualities they tend to develop are not womanly" (Hill, 1903, p. 6). These sentiments were echoed by

Gulick (1906) when he said,

> The case is very different with women . . . they cared for the home. They carried on the industries. They wove the cloth, made the baskets, tilled the soil, cared for the domestic animals, reared the children, prepared the food, made the clothing, and performed the other numerous duties which centered about the home. It was not the women who could run, or strike, or throw best that survived . . . The qualities of womanliness are less related to success in athletics than are the qualities of manhood (p. 159).

Regarding competition for women, Gulick (1906) went on to say that, "public, general competition emphasizes qualities that are on the whole unnecessary and undesirable" (p. 160). Gerber (1974) explained further that many of the early interschool competitions for women took the form of "telegraph" meets where athletes performed at their respective schools under specified guidelines and telegraphed the results to a third party who proclaimed the "winner." Such a process served to negate the "feared emotions that could arise in face-to-face competition" (Gerber, 1974, p. 65).

In light of attitudes and practices such as these, it is not difficult to realize why athletics for women proceeded along a different path than did programs for males -- a path which de-emphasized the rigors of competition and which stressed the social and health values which could be accrued from participation. An excellent example of this is the sport of basketball, which was modified by female physical educators because they perceived the men's game to be too

rough and vigorous for women. As a result, growth of the sport and its participants were handicapped by restrictive rules and regulations which prohibited the "guards" or defensive players from crossing the mid-court line. Similarly the "forwards" or offensive players were confined to the opposite end of the floor. The creators of such restrictions held that a full-court game, such as the one enjoyed by the men, was too strenuous for women and too much exertion was, of course, unbecoming to females (Sargent, 1906).

Attitudes toward the participation of women in sport clearly mirrored the attitudes of society in general toward women. As Eitzen and Sage (1978) noted, "the ultimate basis of sexism in American sport is embedded in the sociocultural milieu of this society, and the cultural traditions of Western civilization that are foundational to American society" (p. 263). Child-rearing practices, attitudes of social institutions such as the schools and the mass media, a lack of role models, negative stereotypes, and differential inequality of opportunity and rewards all served to create social barriers to the access of women to traditionally male-dominated activities, the premier example of which is sport (Gerber, 1971; Hellison, 1973; Krawczyk, 1973). As the consciousness-raising social and political movements of the 60s and 70s began to change social attitudes

toward the involvement of women in non-traditional activities, access to these activities became more readily available.

At the same time that political movements were operating to change social attitudes, organizations such as the Division for Girls and Women's Sport (DGWS), its forerunner, the National Association for Girls and Women's Sport (NAGWS), and the Association for Intercollegiate Athletics for Women (AIAW) were promoting women's athletics. Their efforts facilitated the involvement of girls and women in that previously male-dominated arena. In addition, government legislation enacted in 1972, specifically Title IX of the Higher Edcuation Act, made it unlawful to discriminate on the basis of sex, in any institution receiving federal support. The success of women in athletic endeavors in other countries of the world produced role models for women to emulate and forced North Americans to reexamine traditional views of the value of sports competition for women. According to Alderman (1974), "the gradual changeover to this modern view has already shown that women are equal in competitiveness to men, and it can now be seen on our sport scene that formerly negative incentives, such as derision, reproof, and criticism, are being replaced by positive incentives, such as prestige, status, and recognition, for successful and competitive women athletes" (p. 99).

Kane (1972b) pondered whether perceived differences in personality between male and female athletes were less than those of the average nonparticipating men and women. This sentiment has been echoed in the writings of Harris (1972, 1975), Snyder and Kivlin (1975), and Fodero (1976) which show, for the most part, that males and females are more similar than different with respect to their interests, participation, and performance in sports.

Such writing and research seemingly points to the existence of what researchers in the area of social psychology have termed the "androgynous" personality (Bem, 1974, 1976; Spence & Helmreich, 1978). Stated briefly, this position seeks to develop a conception of mental health that is free from culturally imposed definitions of masculinity and femininity. It contends that the concepts of masculinity and femininity are not bipolar opposites but rather, that these are separate dimensions which coexist in varying degrees within each individual. As Bem (1976) stated,

> With respect to . . . sex-role identity, it is argued that masculinity and femininity represent complementary domains of positive traits and behaviors, and that it is therefore possible, in principle, for an individual to be both masculine and feminine, both instrumental and expressive, both agentic and communal, depending upon the situational appropriateness of these various modalities (p. 48).

With respect to the study of sport, Harris (1975), Duquin (1978a), and Oglesby (1978), have examined the appropriateness of this concept to the study of personality

among athletes. While these researchers vary in their interpretations, all agree on the androgynous nature of the sport experience. Sport, argues Harris, is a "human activity" rather than a masculine or feminine one (Harris, 1975).

As barriers to participation further diminish and attitudes toward sex roles and female involvement in sport continue to shift toward outright approval, the answers to questions raised in this area of research study will become more clear. It is the writer's speculation that there will be an increasing body of evidence supporting the contention that antecedents for successful involvement in competitive sport are identical for both men and women.

The Motive to Participate and Achieve

The following discussion focuses on the motives which influence an individual to participate and strive for success in the world of competitive athletics. Initially, the process by which a prospective athlete is socialized into the sport milieu is examined. This is followed by a discussion of the factors which influence the level at which an individual performs.

The Motive to Participate

Since sport roles are achieved rather than ascribed, the individual must enter these roles through the process of socialization. It is by means of this process that the knowledges, attitudes, and motor skills are learned

which make the individual a functioning member of the sport milieu. Kenyon and McPherson (1973) described the three main elements of the socialization process as "significant others (socializing agents) who exert influence within social systems (socializing agencies) upon role learners (actors or role aspirants) who are characterized by a wide variety of relevant personal attributes" (p. 305).

It has been alluded to earlier in the discussion of women's sport involvement that conditions must be favorable for socialization to occur. If individuals are to develop the skills necessary to become collegiate athletes, the environment must afford them the opportunity to do so.

Research has shown that many factors contribute to creating an environment which is conducive to athletic socialization. First of all, opportunity for participation must be readily available to the individual at an early point in his or her life (Loy, McPherson, & Kenyon, 1978). Second, participation must be valued and encouraged by significant others (socializing agents) in the individual's immediate environment. Parents, relatives, peers, teachers, and coaches, through their positive or negative sanctions, dictate whether participation will be perpetuated or inhibited. In a study of Atlantic Coast Conference football and basketball players, Lidstone (1979) noted the importance of the early environment and the attitudes of significant

others, namely parents and relatives, to encourage and continue participation. The parents of these highly skilled athletes were extremely supportive of their children's involvement at an early age and, indeed, many of them were, or had been, actively involved in sport themselves. Finally, the initial experience needs to be a successful one for the behavior to continue (Vanek & Cratty, 1970; Orlick, 1974; Halliwell, 1978). Again, socializing agents play a major role in determining, for the impressionable individual, whether the experience is to be positive or negative.

All of the aforementioned serve to create an environment which is conducive to athletic involvement. Once the individual becomes involved, training in the form of coaching and the opportunity for competitive expression must be available in order for necessary skills to develop. Whether or not such skills are attained depends, to a great extent, on the motivation of the athlete to succeed.

The Motive to Achieve

Motivation is an extremely complex phenomenon which can arise from a single factor or any combination of factors. In general, motivation can be defined as a behavior-regulating process which is induced by an internal or external source creating an arousal such that the behavior is directed toward a specific goal or set of goals (Cofer & Appley, 1964). The complexity of motivation lies in the fact that these

internal or external motives which trigger behavior can take many forms. For example, biological needs such as thirst, hunger, and sexual drives stimulate behavior leading to gratification. Similarly, psychological states such as anxiety, stress, frustration, and so forth can induce an individual to behave in a prescribed manner. One of these psychological motives has been identified as the need to achieve (n Ach).

According to Atkinson (1964) the achievement motive (n Ach) is a relatively stable and enduring aspect of personality which leads an individual to strive or compete for success against some standard of excellence. Heckhausen (1967) pointed out that the concept of achievement motivation had its origins in the writings of Ach (1910) and Lewin (1926). Ach adopted the notion of "determining tendency" to explain achievement-oriented behavior and Lewin postulated the existence of "quasi-needs."

Murray (1938) was the psychologist credited with truly refining the concept of needs as determinants of behavior. According to Murray (1938), needs could be divided into two classifications: (a) viscerogenic or primary, and (b) psychogenic or secondary needs. Viscerogenic needs included homeostatic and biological functions such as respiration (air), water, food, sex, lactation, urination, and defecation.

Need to achieve (n Ach) was but one of 28 psychogenic needs identified by Murray. He defined n Ach as the tendency,

> to do things as rapidly and/or well as possible . . . To master, manipulate, and organize physical objects, human beings or ideas . . . To overcome obstacles and attain a high standard . . . to excel one's self. To rival and surpass others (Murray, 1938, p. 164).

Murray (1938) identified n Ach as being a basic need. Gratification in the form of behavior is the manifestation of that need. Achievement motivation, then, has to do with the strength and intensity of the arousal and subsequent persistence of the behavior which leads to need gratification.

Achievement motivation is a temporarily aroused tendency to strive for a particular goal. According to Heckhausen (1967) it is,

> the striving to increase or keep as high as possible, one's own capabilities in all activities in which a standard of excellence is thought to apply and where the execution of such activities can, therefore, either succeed or fail (p. 4).

The theory of achievement motivation, then, "attempts to determine the direction, intensity, and persistence of behavior in a specific and limited setting -- that is, behavior in a pure achievement setting" (Alderman, 1974, p. 203). In order for the theory to be applicable, the individual must be aware of evaluation (by himself, herself, or others) in terms of some criteria or standard of excellence

(McClelland, Atkinson, Clark, & Lowell, 1953). In addition, individuals must be conscious that they alone are responsible for their actions and that the outcome of performance will either be favorable or unfavorable. Furthermore, evaluation must be immediate and there must be some risk or probability as to the outcome (McClelland, 1961).

From the above description, the appropriateness of examining achievement motivation in sport is obvious. Sport involves competition against an internal (self) or external (opponent or record) standard of excellence. Moreover, participants are immediately aware of whether they have succeeded or failed in their efforts. This opportunity for self-assessment is what draws many individuals, particularly young people, to sport. Competitive sports provide an immediate indication of where one stands in relation to peers and success in sport leads to recognition and status within the immediate community (Eitzen & Sage, 1978; Halliwell, 1979).

It should be reiterated here that achievement motivation theory is designed to be applicable only in a purely achievement-oriented setting (McClelland et al., 1953). Although sport comes as close as any other human endeavor to the concept of a pure achievement setting, Alderman (1974) cautions that nothing short of a highly controlled laboratory environment can create the ideal arena which McClelland et al. (1953) conceptualized. Consequently, there are many

contaminating factors or intervening variables operating when one attempts to analyze the achievement motive in sport. It may be that the individual is motivated by factors totally divorced from achievement.

The strength of the achievement motive is largely determined by two factors: (a) expectancy for success, and (b) incentive value (Atkinson & Feather, 1966; Halliwell, 1978). Research has shown that the achievement motive is strongest when the probability of success is .50 (Atkinson, 1958). In the athletic context, this occurs when two individuals or teams are evenly matched and there is an equal probability that either participant will be victorious. Conversely, the motive to achieve will be lowest if opponents are grossly mismatched and the probability of success for the more highly skilled participant approaches 1.0.

The second factor influencing the persistence and direction of the achievement motive is the incentive value attached by the individual to the outcome of the performance (Halliwell, 1979). If the individual has found, through past experience, that success brings great pleasure and, conversely, that failure results in great displeasure, then the motive to achieve will be high.

Motive has been defined as, "a strong affective association, characterized by an anticipatory goal reaction

and based on past association of certain cues with pleasure and pain" (McClelland, 1951, p. 466). What is meant by this statement is that motive is a state of mind which is triggered by a certain cue or stimulus that causes the individual to act either (a) to achieve pleasure (approach) or (b) to avoid unpleasantness (avoidance). In the former case, if an athlete has experienced success in past performances, then he or she is likely to approach the athletic contest with vigor in an effort to once again achieve the pleasantness associated with success. The antithesis to this is the individual or team that has experienced past failure and anticipates further failure. The primary motive in this case would be the avoidance of the unpleasant feelings associated with a continued lack of success. In either case, as Alderman (1974) has said, "the arousal of such motives causes an increase in the intensity of a person's behavior, which subsequently leads to an increased performance output" (p. 207).

Given the potential application of achievement motivation theory to the study of athlete begavior and athletic performance, one would expect to be able to draw some concrete conclusions from a large body of research. However, such is not the case. A number of studies (Berlin, 1971; Bird, 1980; Burton, 1971; Fodero, 1976; Gorsuch, 1968; Plummer, 1969; Ross, 1971; Stebbins, 1969;

Vanek & Hosek, 1970; Webber, 1970; Willis, 1968) have attempted to study various aspects of the need to achieve and its applicability to the sport setting. Meaningful interpretation of these diverse research efforts is difficult for methodological reasons.

First, with respect to the populations under study, these projects investigate an array of athletes representing both sexes, and ranging in age from youth to adults. Additionally, the samples are drawn from a wide variety of team and individual sports. This combination of factors makes it impossible to generalize about any particular population or sport.

The second factor inhibiting interpretation of the above research is the variation in the means by which the characteristic is assessed. These studies employ a number of different assessment techniques including direct questionnaires (Lynn Questionnaire, Adjective Checklist, Edwards Personal Preference Schedule), projective techniques (Thematic Apperception Test), and Q-methodology. In addressing problems associated with methodology in this area, Helmreich and Spence (1978) noted that many of the tests in use are not particularly reliable in assessing individual differences in achievement motivation. In addition, certain techniques may not be applicable from one setting to another. Gorsuch (1968), for example, in utilizing McClelland's modification of Murray's (1938) Thematic Apperception Test (TAT), a projective test, found many zero scores until the test was further modified by the investigator to include pictures

depicting achievement in athletic settings.

In examining intercorrelations among all of the instruments which purport to measure n Ach, Fineman (1977) found only 22 of 78 significant correlations. This suggests that many of the instruments currently in use may not be measuring the same variable. Another possible explanation may lie in the complexity of the construct. Researchers have come to realize that many of these tests were treating the concept of achievement motivation as a single unitary construct instead of the extremely complex multi-dimensional phenomenon that it is (Berlin, 1974; Fineman, 1977; Helmreich & Spence, 1978). To this end, Berlin has modified Q-methodology to incorporate the multi-dimensional facets of motivation which she terms "mastery", "mediational", and "self-regard" (Berlin, cited in Bird, 1980). Similarly, Helmreich and Spence (1978) derived a scale (Work and Family Orientation Questionnaire) which conceptualized achievement motivation as consisting of a combination of four elements: (a) Work, (b) Mastery, (c) Competitiveness, and (d) Personal Unconcern. All of these factors would appear to have obvious applicability to the study of achievement motivation in the sport setting.

Interpersonal Values and Achievement

It has been said that an individual's beliefs, attitudes, and values are the underlying foundation upon

which choices and decision-making are based (Rokeach, 1968). Values are, to a large extent, culturally determined and are based upon societal norms and ideals as well as the beliefs of significant others whom the individual holds in high esteem. Hutcheon (1972) underscored the importance of values when he said:

> The young human organism rapidly progresses from random selections to belief construction (learning to "know" and to "value") as he organizes input from the raw data of experience: data which include, in addition to momentary feeling-states, the ideals, norms, and established knowledge of his culture. According to this model, values are learned criteria that predispose us to act as we do. They emerge from the inextricably intertwined affective and cognitive belief systems. Attitudes are merely the surface, or more specific manifestations of these underlying values (p. 180).

It follows that behavior is the direct or indirect manifestation of these systems of beliefs and values. Gordon (1976) has said that individuals can be characterized in terms of their motivational dimensions and the values that they possess. More specifically, "values may be instrumental in determing what they do or how well they perform. Their immediate decisions, as well as their long-range plans, are influenced, consciously or unconsciously, by their value systems" (Gordon, 1976, p. 1). Given these statements, the appropriateness of the study of values and their subsequent effect on behavior in the sport setting, should be apparent.

Of particular relevance to the understanding of athlete behavior in team sport settings is the concept of interpersonal values. Interpersonal values are defined as values which involve the individual's relationships with other people (Gordon, 1976). Zander (1978) has noted the unique quality of the athletic team as a social organization. A team, by definition, "is a social unit with a task that requires a set of persons to accomplish; no individual members can do it alone" (Zander, 1978, p. 102). Within this small group, therefore, the individual must strive to perform to the utmost of his or her ability in a highly visible arena and do so without alienating the other members of the team. Interpersonal values determine, to a great extent, the success that an individual has in managing such a tenuous situation and, presumably, teams which experience minimal conflict have less difficulty performing their task.

While it appears that values potentially influence the way in which an individual behaves, a word of caution is appropriate. In response to a pervasive concern expressed by many researchers with regard to the volume of research in which the actions of subjects were not always consistent with values, Hutcheon (1972) cautioned that, "values bear no necessary relationship to the statements of belief that are cited in response to direct questions" (p. 180). It

may be a quantum leap of faith to hypothesize that the values indicated via a "paper and pencil" test completed in a classroom setting will be exhibited in the behavior which occurs in the highly charged emotional atmosphere of the athletic arena. Yet, in the absence of observed behavioral data, the psychological "test" at least provides a starting point for research.

Predicting Athletic Performance

At the essence of the research process is the identification of certain facts which can be said to be true for the population under investigation. Taken a step further, one would hope that, if the research were properly conducted, the same information would hold for the same group under similar circumstances. This is the essence of the prediction process. If two variables are observed to be highly correlated, then even if only one variable is known, a great deal is known about the other. Furthermore, in the research process, variables are labelled "independent" and "dependent." That is to say, a certain variable is dependent upon another variable or set of variables that are independent. Given this, if two phenomena are observed to be highly related, then it should be possible to predict the appearance of one if only the other is known.

In the athletic environment, certain psychological variables are thought to be highly related to athletic

performance. If this is true, then it should be possible to discriminate among athletes of differing skill levels based on these psychological characteristics. Morgan (1978) noted that sport psychologists appear to have taken either a "credulous" or a "skeptical" viewpoint on this issue. The fact remains however, that if the factors or variables which constitute athletic performance are known, and if such variables can be accurately and reliably measured, then these variables should be effective predictors of future performance.

Psychological data have been employed in such sports as crew (Morgan & Johnson, 1978), distance running (Morgan & Pollock, 1977) and wrestling (Nagle, Morgan, Hellickson, Serfass, & Alexander, 1975) to predict the selection of athletes to U. S. Olympic teams. It should be pointed out that, in a sense, such research relies upon post hoc analysis. That is to say, once the selection of athletes has been made by coaches in the traditional manner, the athletes are psychologically tested and profiled, and the results are correlated with their performance, i.e., making the team or failing to make the team.

All of the above studies focused on the use of psychological states and traits as predictors of performance. A variety of psychological inventories were used including the State Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), Somatic Perception Questionnaire

(Landy & Stern, 1971), Depression Adjective Checklist (Lubin, 1967), Profile of Mood States (McNair, Lorr, & Droppleman, 1971), and the Eysenck Personality Inventory (Eysenck & Eysenck, 1968). Morgan (1979) reported a success rate in these investigations of approximately 70 percent.

A number of investigations have attempted to discriminate between and among athletes of different performance levels utilizing the achievement motivation construct. From their work, Vanek and Hosek (1970) concluded that n Ach, as measured by McClelland's TAT, was a vital characteristic in the makeup of superior athletes. Furthermore, they hypothesized from the results that it would be reasonable to expect a higher need for achievement among superior athletes than among either average athletes or nonathletes.

Burton (1971) utilized stepwise multiple regression analysis to examine the relationship between state and trait anxiety, skill attainment in bowling and riflery, and achievement motivation as measured by Costello's (1967) scales. The State Trait Anxiety Inventory (Spielberger et al., 1970) was used to determine anxiety scores. Burton found no relationship between achievement motivation and skill attainment.

Gorsuch (1968) compared individual sport athletes, team sport athletes, and nonathletes with respect to n Ach

utilizing the TAT. No significant differences were found among the groups.

Of particular relevance to the present study was the work of Willis (1968), who felt that athletic success among collegiate wrestlers could be predicted utilizing n Ach scores, as measured by the TAT, and "competitive spirit," as signified by the subjective rating of the coach and teammates. Willis concluded that achievement motivation could not be considered a valid predictor of success; nor could n Ach discriminate between successful and unsuccessful wrestling performance.

Several investigations are available which utilized Q Sort methodology as the measure of achievement motivation. Plummer (1969), for example, was unable to discriminate between team sport athletes (baseball players) and individual sport athletes (gymnasts) based on n Ach scores.

In another study of gymnasts, Fodero (1976) examined differences between male and female gymnasts classified as high-level and lower-level performers utilizing Berlin's Q Sort and the Lynn Achievement Motivation Questionnaire. Fodero found no differences in need to achieve or motivational tendencies among athletes of different performance levels. Additionally, he observed no differences between male and female gymnasts lending support to the contention made earlier

that male and female athletes may be more similar than different with respect to the antecedents of successful sport involvement.

Finally, Bird (1980) employed Berlin's Q Sort to examine achievement motivation among three levels of high-calibre soccer players. The three classifications were (a) juvenile, (b) collegiate, and (c) professional. Significant differences among performer levels were reported in only 3 of the 9 possible comparisons with respect to motivational tendencies. Bird concluded that there was a remarkably high degree of consistency across these diverse performer levels.

Once again, the reader is cautioned against generalizing from the above research efforts given the diversification of sports and samples and the number of different assessment techniques utilized. While it would appear that efforts to discriminate among differing skill levels based on achievement motivation have been less than successful, such conclusions might be premature. The majority of the aforementioned investigations utilized n Ach as the sole discriminator of performance. This was compounded by the treatment of the variable as a unitary construct. Since athletic performance is a complex phenomenon comprised of many components, it is not surprising that efforts to discriminate among performance levels based

upon a single variable would be unsuccessful. The present investigation attempts to utilize a multi-faceted construct of achievement motivation, in concert with a number of values perceived to be germane to the sport setting, in an effort to explain athletic performance as measured by the concept of Most Valuable Player.

CHAPTER III

PROCEDURES

The procedural decisions made in the conduct of this inquiry are described in this chapter. Following the customary clearance from the School of Health, Physical Education, Recreation, and Dance Human Subjects Review Committee, the steps undertaken to carry out the research are presented as follows: (a) selection of data collection instruments, (b) pilot administration of survey forms, (c) determination of the sample, (d) collection of the data, (e) characteristics of the sample, (f) selecting a dependent variable (g) plans for analysis, and (h) data transformations. The general rationale for each decision is briefly addressed.

Human Subjects Approval

Prior to the initiation of the research process, approval was obtained from the Human Subjects Review Committee of the University of North Carolina at Greensboro. Since the project was to take the form of an individualized mailing and because the test instruments were perceived to be nonthreatening to the psychological well-being of the participants, it was determined that it would be unnecessary to obtain signed consent forms from each subject.

The Review Committee maintained that completion and return of the data collection instruments constituted consent on the part of the subjects to voluntarily participate in the study.

Data Collection Instruments

The instruments used in the survey were selected based upon two criteria: simplicity and the relatively minimal length of time required for completion. In addition to the validity and reliability reported for the population to be studied -- college students, each instrument is straightforward and easy to understand -- essential characteristics for the self-administered data collection process in a study of this nature. Both the Work and Family Orientation Questionnaire (WOFO III) and Gordon's Survey of Interpersonal Values (SIV) can be completed in approximately ten minutes.

Test booklets of the Gordon's SIV were obtained from Science Research Associates of Chicago, Illinois. Permission to use Spence and Helmreich's (1978) Work and Family Orientation Questionnaire was obtained from the principal authors.

Work and Family Orientation Questionnaire

This instrument is the culmination of the work of two researchers, Spence and Helmreich, who desired to study

the phenomenon of achievement motivation. It is an attractive research tool for several reasons. First, it conceptualizes achievement motivation as a multidimensional rather than a unidimensional phenomenon, breaking it down into four components: (a) WORK, (b) MASTERY, (c) COMPETITIVENESS, and (d) PERSONAL UNCONCERN. Second, it is a self-administered scale which can be completed in approximately ten minutes and, perhaps most important, it is suitable for both sexes. See Appendix D for complete derivation.

The 23 items on the Work and Family Orientation Questionnaire consisted of a five-point Likert scale. Responses ranged from Strongly Agree to Strongly Disagree. The response alternative designated as the highest achievement response received a score of 4. The remaining alternatives were scored in order 3, 2, 1, and 0. Each question or item was assigned to one of the four variables based on factor analyses conducted by the test creators. Composite scores for each variable were determined by summing the item scores for each variable. High scores indicated more of the named attribute.

Gordon's Survey of Interpersonal Values

The Survey of Interpersonal Values is a self-administered, forced-choice instrument designed to measure salient values concerning the individual's relationships and

interactions with other people. Given that behaviors are direct or indirect manifestations of one's value systems, it follows that values are critical to the individual's personal, social, marital, and occupational adjustment and well-being. The six values measured by the SIV are SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP. These are characteristics which have been cited as essential qualities of the personality of the successful athlete (Tutko, Lyon,& Ogilvie, 1969). Moreover, they tend to be viewed as antecedents of athletic participation and performance. The SIV requires approximately ten minutes for completion. See Appendix E for complete derivation.

The 90 items on Gordon's Survey of Interpersonal Values are grouped into 30 triads. Within each triad the respondent indicated the item which is <u>most</u> important and the item which is <u>least</u> important. The remaining item was left unmarked. Each item belongs to one of six variables. The instrument was scored by means of a hand-overlay stencil. The item marked "most important" received a score of 2. The item left unmarked was given a score of 1 and the item marked "least important" received a score of 0. The composite score for each variable was computed by summing the items which belonged to that variable. High scores indicated more of the named attribute.

Most Valuable Player Rankings

A separate but conceptually identical form was created for use by coaches and athletes to rank their players and teammates, respectively, in terms of perceived value to the team over the course of the 1981-82 basketball season. The form consisted of an alphabetized list of team members, prepared in advance by the investigator from the player roster. The respondent was required to rank all team members from "most valuable" to "least valuable." Ties were permitted; however, no more than two individuals could receive the same numerical ranking. Responses from the players were averaged to create a single "Players' Average Ranking" score for each team member. The terms "most valuable" and "least valuable" were not defined for the respondent. The entire ranking procedure could be completed in five minutes.

Pilot Administration of Survey Instruments

Prior to the mailing of data collection materials to the entire sample studied, the cooperation of four intercollegiate basketball players (two male and two female) from the University of North Carolina at Greensboro was enlisted for trial administration of all data collection instruments. The purpose was to determine whether the instructions provided in the test packet were sufficient to ensure accurate completion and return of all data collection materials. These subjects were instructed to proceed as though

they had just received the information in the mail. Variations were observed in the length of time required to complete the materials (21 to 32 minutes); however, there was no discernible difficulty in responding to the forms. The pilot administration did not suggest the need for any change in tools.

Determination of the Sample

The population investigated consisted of intercollegiate basketball players associated with educational institutions in and around the Piedmont region of North Carolina and southern Virginia. The sample consisted of subjects from ten educational institutions who were affiliated either with the National Collegiate Athletic Association (NCAA), Division III; the National Association of Intercollegiate Athletics (NAIA); or the Association for Intercollegiate Athletics for Women (AIAW).[1] Additionally, the sample was classified into two subgroups:

1. Male intercollegiate basketball players competing either in NCAA Division III or NAIA athletics.
2. Female intercollegiate basketball players competing for schools affiliated with NCAA Division III, NAIA, or AIAW.

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[1]Since the conclusion of this investigation, the Association for Intercollegiate Athletics for Women has ceased to function as a governing body for women's athletics.

Prior to identification of the schools that would be solicited for participation in the investigation, it was acknowledged that a specific number of subjects would be necessary to allow a meaningful analysis of the data considering the types of statistical techniques and the number of variables contemplated. It was determined that a minimum of five men's teams and five women's teams and a total of forty subjects per subgroup would be the criteria for the proposed study. In addition, it was stipulated that, in order for a team to merit inclusion in the project, responses had to be received from at least fifty percent of its members. Thus, the integrity of the study could be maintained.

To ensure that these requirements would be met, ten institutions from the previously described geographic region were selected for study. These schools included Averett College, Catawba College, Elon College, Guilford College, Greensboro College, High Point College, Mars Hill College, North Carolina Wesleyan College, Pfeiffer College, and the University of North Carolina at Greensboro. Additionally, three institutions (Atlantic Christian College, Christopher Newport College, and Virginia Wesleyan College) were designated as reserves in the event that the requisite number of teams and subjects could not be obtained from the original list.

Collection of Data

The first step in the process of collecting data that bears upon the problem under study was to contact the athletic directors of the above-named schools by telephone to determine their willingness to participate in this investigation. All athletic directors from the primary list of ten colleges indicated that they had no objections to the project and referred the investigator directly to the head coaches of the teams to be involved.

Telephone contact was made with the head coach of each team. The study was explained to the coaches in detail and their cooperation was solicited. All were asked to forward to the investigator a list of names of the squad members for the 1981-82 season and the local mailing address of each player. Players who dropped themselves from the team or terminated team affiliation for any reason other than injury were not included in the study. Injured players who had participated in fewer than 20 percent of the total number of games played were similarly excluded.

Once the list of team members and addresses was received, an initial letter was sent to each player soliciting his or her cooperation. (See Appendix A for complete derivation.) The letter contained a broad explanation of the study and outlined the procedures to follow. Where

feasible, the letters were taken directly to campus by the investigator and deposited in the campus mail system in order to save postage costs.

As an added incentive to participate in the study, players were informed that upon return of the survey materials by a designated date, their names would be entered in a drawing for a 12" black-and-white, portable television set. The coaches and athletic directors had indicated their approval for such an incentive. The North Carolina State Attorney General's Office was contacted to determine the legality of such an offer; no objections were raised. The investigator believes that this incentive positively influenced both the volume of responses and the speed at which they were returned.

Two days after the initial letter was mailed, each player was sent a packet of materials. The packet was mailed in a standard 4¼" x 9½" legal-size envelope and contained the following:

1. Cover letter (Appendix B)
2. Most Valuable Player ranking procedure (Appendix C)
3. Work and Family Orientation Questionnaire (Appendix D)
4. Gordon's Survey of Interpersonal Values (Appendix E)
5. Contest entry form
6. Pre-addressed, stamped return envelope.

Each questionnaire was numerically coded so that it could be readily determined which players were returning the information. The contest entry forms helped in this regard as well. Response to the survey was excellent and the flow of questionnaires stopped abruptly after the prescribed deadline for return. It was determined that a follow-up letter to players who had not returned the materials would not be necessary. The number of additional returns to be gained by such a procedure simply did not justify the cost in terms of time and expense.

Once the percentage of responses from each team was ascertained, the appropriate letter was sent to the head coach indicating either (a) that his or her team would not be included in the study (Appendix F), or (b) that his or her team would be included and therefore further cooperation of the coach was needed (Appendix G). Accompanying the latter was a form to be used for ranking the coach's players in terms of their perceived value to the team. See Appendix H for complete derivation. A pre-addressed and stamped return envelope was also made available. A follow-up letter and/or telephone call was tendered in cases where a response was not received within ten days.

Characteristics of the Sample

As was previously mentioned, ten educational institutions and twenty teams (ten male and ten female) were selected to participate in the study. A total of 203 test packets were mailed to 110 males and 93 female prospective participants. Table 1 provides a breakdown of the number of respondents by school and sex.

Table 1

Frequency of Returns by School and Sex

	Male			Female		
School	Roster Size	Returns	%	Roster Size	Returns	%
Averett	11	7	63.6	0[b]	0	0.0[a]
Catawba	13	9	69.2	10	6	60.0
Elon	13	1	7.7[a]	13	8	61.5
Guilford	8	5	62.5	9	8	88.9
Greensboro	11	6	54.5	10	8	80.0
High Point	13	12	92.3	9	2	22.2[a]
Mars Hill	6	0	0.0[a]	8	5	62.5
N.C. Wesleyan	8	6	75.0	11	8	72.7
Pfeiffer	14	9	64.3	12	3	25.0[a]
UNC-G	13	2	15.4[a]	11	10	90.9
	110	57	51.8	93	58	62.4

[a]Teams excluded for failure to meet 50% criteria
[b]Roster was not received from head coach

In all, responses were received from 57 male (51.8%) and 58 female (62.4%) athletes. This translates into a total return rate of 56.7% which can be described as mediocre

at best. However, six of the 20 teams were eliminated for failure to meet the 50% response criteria. Fortunately, the number of players from those teams which were excluded represented an insignificant portion of the total. As a result, very few of the returns were discarded. Table 2 represents a revised index of the returns using only those teams and institutions ultimately included in the analysis.

As Table 2 indicates, the revised percentages offer a considerably more palatable return rate. Fifty-four of 78 male athletes (69.2%) responded, while 53 of a possible 72 female athletes (73.6%) returned the survey instruments. This represents a combined return rate of 71.3 percent.

Selecting a Dependent Variable

Perhaps one of the main reasons that investigations of this nature fail, or are not even attempted, is the difficulty in identifying a single variable which accurately represents such a complex phenomenon as "athletic performance." With respect to basketball, many statistical variables are available which are indicators of performance yet all are unsatisfactory for some reason or another. Points per game is one indicator of performance but fails to account for the individual who made the passes, or who successfully brought the ball upcourt, or who collected most of the rebounds. Similarly, none of these statistics

Table 2

Frequency of Returns by Sex for Schools Utilized in Study[a]

Male				Female			
School	Roster Size	Returns	%	School	Roster Size	Returns	%
Averett	11	7	63.6	Elon	13	8	61.5
Catawba	13	9	69.2	Catawba	10	6	60.0
Guilford	8	5	62.5	Guilford	9	8	88.9
Greensboro	11	6	54.5	Greensboro	10	8	80.0
High Point	13	12	92.3	Mars Hill	8	5	62.5
N.C. Wesleyan	8	6	75.0	N.C. Wesleyan	11	8	72.7
Pfeiffer	14	9	64.3	UNC-G	11	10	90.9
	78	54	69.2		72	53	73.6

[a] Only schools with a response rate of 50 percent or greater were included in the study

account for the "sixth" person who comes in off the bench to provide a lift to the team or the "defensive specialist" who holds the opponents' leading scorer in check. These numerical variables also fail to account for such intangible yet important characteristics as leadership, unselfishness, conformity, desire, competitiveness, and so forth which are said to be part of the makeup of the elite performer (Alderman, 1974; Duquin, 1978b; Pressman, 1979; Tutko, Lyon, & Ogilvie, 1969). Any coach will attest that these factors weigh heavily in their determination of who is selected to the team in pre-season and who receives awards once the season is completed.

The concept of Most Valuable Player was selected as the dependent variable because it is believed that this, more than any other single variable, potentially combines all of the statistical and psychological factors which define athletic performance. At the time of this writing, the baseball World Series is nearing completion having been preceded by the respective National and American League Championship Series. At the conclusion of each game, the television broadcasters designate a Most Valuable Player and at the conclusion of each series, the sportswriters select an MVP. It is a concept which is difficult to define. precisely, yet which is widely used in all levels of sport. One characteristic to be noted is that MVP is never based on the same criteria when used in successive events. In

baseball it may be the winning pitcher, or the catcher who called the game, the player with the highest batting average, or the player whose lone hit came at a critical point in a crucial game. It may be the seasoned veteran who is the acknowledged leader on the team or the inexperienced "rookie" whose desire and enthusiasm are contagious. All of these factors are acknowledged to operate in concert in order to manifest themselves as performance. Presumably, the concept of Most Valuable Player takes all of these factors into account.

Plans for Data Analysis

In order to answer the framing questions posed in Chapter I, the following statistical analytic techniques were anticipated. Questions #1 and #2 relative to the effectiveness of predicting Most Valuable Player rankings utilizing psycho-social variables as independent variables could be answered using stepwise multiple regression analysis. In order to determine the answer to framing question #3, relative to the comparison between male and female athletes on the variables under investigation, a series of two-sample T-tests were planned. These procedures were performed using the Statistical Package for the Social Sciences (SPSS). In all cases, an alpha level of .05 was pre-selected. Significance of the F and T statistics were determined using a standard table of values.

Data Transformations

Because of the discrepancies in squad size and number of games played by each team, certain data transformations had to be effected in order to provide accurate comparisons between and among players on teams of different sizes. An example is offered to illustrate the necessity of this. Without any modification of the data, an athlete on a squad of eight players who received a ranking of seven would be equated with the player who received a similar ranking of seven but whose team consisted of 14 members. To correct this, the Coach's Most Valuable Player Ranking (CORNK) and Players' Average MVP Ranking (PLRNK) were divided by roster size in order to create Coach's Percentile Ranking (COPCTRNK) and Players' Average Percentile Ranking (PLPCTRNK).

A similar problem arose when the discrepancy in the number of games played by each team was examined. A player who appeared in all 18 of his or her team's games could not be equitably compared to a player whose team had played 26 games. As a result, the number of games appeared in by each player was represented as a percentage of total games played by that team (PCTGAMES).

Prior to extensive analysis of the data, a Pearson correlation matrix was generated for all variables. Based upon observed correlations between the variables COPCTRNK

and PLPCTRNK (r =.91 for females; r =.92 for males), the decision was made to utilize the MVP percentile rankings of the head coaches (COPCTRNK) as the dependent variable in subsequent analyses.

CHAPTER IV

RESULTS AND DISCUSSION

For purposes of discussion, the results of the investigation are presented in five sections. Initially, data from the sample are compared to data collected from other groups of athletes using the same research tools. Following, comparison is made utilizing normative data collected from students of four-year colleges and universities in the United States. The next section presents a comparison between male basketball players and female basketball players on the psycho-social variables under investigation. This is succeeded by a discussion of the feasibility of utilizing psycho-social variables as predictors of athletic performance as represented by Coach's Most Valuable Player Ranking. Finally, the best equation for predicting Most Valuable Player Ranking using both psycho-social and skill-related variables is offered.

Other Data Concerning Athletes and Achievement

Whenever research findings are reported, the inevitable question that must be raised is: "Does this sample represent an accurate picture of the population under investigation?" Clearly, more research must be conducted

with different samples of athletes from different regions of the country and from varying levels of ability before this question can be answered. There is, however, some comparative data, albeit meager, which would seem to support the contention that the variables under consideration may be consistent across different sports and may even transcend the various strata of ability that typify college athletics in this country. As the data in Table 3 indicate, when the male basketball players from the sample studied in the present research are compared with a group of University of Texas team sport athletes (primarily football players), the similarities are striking.

Table 3

Comparison Between Male Basketball Players Studied and Sample of University of Texas Team Athletes on Variables Measured by the Work and Family Orientation Questionnaire

Variable	Group	N	Mean ($\bar{X}$)	S.D.	$\bar{X}_1 - \bar{X}_2$	df	T
Mastery	Male Subjects+	54	20.63	4.16	0.00	122	0.00
	UT Athletes	70	20.63	4.16			
Work	Male Subjects	54	21.41	2.65	1.21	122	2.39*
	UT Athletes	70	20.20	2.91			
Competi-	Male Subjects	54	15.31	2.55	-0.70	122	-1.34
tiveness	UT Athletes	70	16.01	3.10			
Personal	Male Subjects	54	9.50	2.66	-0.07	122	-0.17
Unconcern	UT Athletes	70	9.57	2.05			

+Basketball players from selected NCAA and NAIA schools
*Significant at .02 level

As can be seen from the above table, the two samples are virtually identical on all variables measured by the Work and Family Orientation Questionnaire with the exception of WORK or the "desire to work hard and keep busy" (Helmreich & Spence, 1978). The basketball players from this study scored significantly higher than the NCAA Division I-A athletes.

The reader is cautioned not to generalize from the above comparisons given the diversity of the two samples. Nevertheless, some interesting questions are raised with respect to the possible universality of the achievement motive, particularly in light of the findings reported earlier by Bird (1980).

Athletes and Nonathletes

In contrast to the data from the above samples of athletes, a considerable amount of information collected from college students derived from the same instruments as those used in this investigation is available for comparison. The comparative data were collected by the creators of the Work and Family Orientation Questionnaire and Survey of Interpersonal Values for use in determining the validity and reliability of their instruments. The results of the comparisons between the athletes in this study and two different samples of college students from four-year colleges throughout the United States are presented in Tables 4 - 7.

Table 4

Comparison Between Male Basketball Players Studied and Normative Sample of Male College Students on Variables Measured by the Work and Family Orientation Questionnaire

Variable	Group	N	Mean ($\bar{X}$)	S.D.	$\bar{X}_1 - \bar{X}_2$	df	T
Mastery	Male Subjects	54	20.63	4.16	1.36	658	2.18*
	Male Students	606	19.27	4.40			
Work	Male Subjects	54	21.41	2.65	1.61	658	3.77***
	Male Students	606	19.80	3.03			
Competi-tiveness	Male Subjects	54	15.31	2.55	1.68	658	3.19**
	Male Students	606	13.63	3.79			
Personal Unconcern	Male Subjects	54	9.50	2.66	-0.52	658	-1.31
	Male Students	606	10.02	2.81			

* significant at .05 level
** significant at .01 level
***significant at .001 level

When athletes were compared to their academic peers on the variables measured by the Work and Family Orientation Questionnaire (see Tables 4 and 5), significant differences appeared on all variables with the exception of PERSONAL UNCONCERN for the male sample. Athletes attained considerably higher scores than those obtained by the college student sample on the variables MASTERY, WORK, and COMPETITIVENESS. Female athletes recorded lower scores than female college students only on PERSONAL UNCONCERN suggesting that there may be some sensitivity on the part of the athletes for the negative reactions of others to their achievements. The nature of team sports is such

that success requires both cooperation and competitiveness on the part of its members and, as Coakley (1978) has pointed out, these processes are not compatible. It is essential that team sport members work together in a harmonious fashion in order to attain the goals of the group (Klein and Christiansen, 1969; Alderman, 1974; Straub, 1978). Data from the present study reveals that this would appear to be so only for females.

Table 5

Comparison Between Female Basketball Players Studied and Normative Sample of Female College Students on Variables Measured by the Work and Family Orientation Questionnaire

Variable	Group	N	Mean ($\bar{X}$)	S.D.	$\bar{X}_1 - \bar{X}_2$	df	T
Mastery	Subjects+	53	21.17	4.41	3.13	900	4.82***
	Students++	849	18.04	4.60			
Work	Subjects	53	21.79	2.50	1.49	900	3.72***
	Students	849	20.30	2.86			
Competi-	Subjects	53	14.68	3.40	2.48	900	6.15***
tiveness	Students	849	12.20	2.81			
Personal	Subjects	53	9.15	3.00	-1.09	900	-2.79**
Unconcern	Students	849	10.24	2.74			

+ Female basketball players from selected NCAA, NAIA, and AIAW schools
++Female college students from normative sample
** significant at .01 level
***significant at .001 level

When comparing a sample of male athletes to the normative data from general college students, Helmreich

and Spence (1978) detected similar differences in MASTERY and COMPETITIVENESS scores. Elevated COMPETITIVENESS scores for athletes can be expected because of the obvious competitive nature of athletic endeavors. Although Helmreich and Spence observed no difference on the WORK variable, the present study seems to indicate that its subjects, basketball players, are more industrious, as indicated by the WORK score, than the general college student sample.

Table 6 compares basketball players and male college students on the interpersonal values measured by Gordon's SIV. Male athletes differed significantly from the male college students on all variables with the exception of SUPPORT.

Lower scores were observed by the athletes on RECOGNITION, INDEPENDENCE, and LEADERSHIP while the athletes scored significantly higher on CONFORMITY and BENEVOLENCE. Again the communal nature of small-group activities may explain the observed differences. Group success mandates unselfishness on the part of its members and conformity to the rules and regulations of the game and of the team leaders, i.e., the coaches. Athletes who are too independent or who pursue recognition through individual exploits at the expense of team unity and performance may be counterproductive to the group.

Table 6

Comparison Between Male Basketball Players Studied and Normative Sample of Male College Students on Variables Measured by Gordon's Survey of Interpersonal Values

Variable	Group	N	Mean ($\bar{X}$)	S.D.	$\bar{X}_1 - \bar{X}_2$	df	T
Support	Subjects	51	14.69	5.19	-0.41	2464	-0.53
	Students	2412	15.10	5.60			
Conformity	Subjects	51	16.31	6.22	4.11	2464	4.67***
	Students	2412	12.20	6.40			
Recognition	Subjects	51	10.18	4.00	-2.02	2464	-2.89**
	Students	2412	12.20	5.10			
Independence	Subjects	51	15.69	6.00	-3.81	2464	-3.91***
	Students	2412	19.50	7.10			
Benevolence	Subjects	51	19.67	5.22	5.37	2464	-6.06***
	Students	2412	14.30	6.50			
Leadership	Subjects	51	12.96	6.29	-3.74	2464	-3.94***
	Students	2412	16.70	6.90			

** significant at .01 level
***significant at .001 level

It would appear from examining Table 7 that the above is not the case for female athletes. The female athletes were virtually identical to their academic peers on all variables. The only possible exception is SUPPORT where a marginally ($.05<p<.10$) significant difference was detected. However, as will be shown in the next section, the apparent discrepancy between male and female comparisons lies not in the fact that male athletes differ from female athletes but rather that both male and female athletes are similar

to female college students in terms of their value systems.

Table 7

Comparison Between Female Basketball Players Studied and Normative Sample of Female College Students on Variables Measured by Gordon's Survey of Interpersonal Values

Variable	Group	N	Mean ($\bar{X}$)	S.D.	$\bar{X}_1 - \bar{X}_2$	df	T
Support	Subjects	52	16.92	5.31	-1.18	1579	-1.70+
	Students	1529	18.10	4.90			
Conformity	Subjects	52	13.83	6.13	-0.37	1579	-0.43
	Students	1529	14.20	6.10			
Recognition	Subjects	52	11.25	4.74	-0.55	1579	-0.78
	Students	1529	11.80	5.00			
Independence	Subjects	52	16.96	5.78	0.66	1579	0.73
	Students	1529	16.30	6.40			
Benevolence	Subjects	52	18.69	5.50	0.59	1579	0.72
	Students	1529	18.10	5.80			
Leadership	Subjects	52	12.19	6.28	0.69	1579	0.77
	Students	1529	11.50	6.40			

+significant at .10 level

Male Athletes and Female Athletes

While it appears that athletes differ from college students on many of the psycho-social variables under investigation, the same cannot be said when male basketball players are compared to female basketball players studied in this research. No significant differences were calculated for any of the achievement motivation component variables

as measured by the Work and Family Orientation Questionnaire (Table 8).

Table 8

Comparison Between Male and Female Basketball Players on Variables Measured by the Work and Family Orientation Questionnaire

Variable	Group	N	Mean ($\bar{X}$)	S.D.	df	T	p
Mastery	Male	54	20.63	4.16	105	-0.65	.516
	Female	53	21.17	4.41			
Work	Male	54	21.41	2.65	105	-0.77	.441
	Female	53	21.79	2.50			
Competitiveness	Male	54	15.31	2.55	105	1.09	.277
	Female	53	14.68	3.40			
Personal Unconcern	Male	54	9.50	2.66	105	0.64	.525
	Female	53	9.15	3.00			

Both male and female athletes studied appear to possess virtually identical motivational characteristics as measured by the Work and Family Orientation Questionnaire. Singer (1980) has said that motivation is responsible for (a) the selection of and preference for some activity, (b) persistence at the activity (duration of training), (c) intensity and vigor of performance (effort), and (d) adequacy of performance relative to standards. The data reported in this investigation indicated that, for these male and female athletes, the structure of achievement

motivation is remarkably similar. This lends support to the hypothesis made earlier that, because of changing role expectations relative to the demands and consequences of sport involvement (Coakley, 1978), women are no longer hesitant about selecting a traditionally male-dominated activity and pursuing it with the same enthusiasm and effort as their male counterparts.

The similarities between male and female athletes become more apparent when various values measured by Gordon's Survey of Interpersonal Values (Table 9) are examined.

Table 9

Comparison Between Male and Female Basketball Players Studied on Variables Measured by Gordon's Survey of Interpersonal Values

Variable	Group	N	Mean ($\bar{X}$)	S.D.	df	T	p
Support	Male	51	14.69	5.19	101	-2.16	.033*
	Female	52	16.92	5.31			
Conformity	Male	51	16.31	6.22	101	2.04	.043*
	Female	52	13.83	6.13			
Recognition	Male	51	10.18	4.00	101	-1.24	.218
	Female	52	11.25	4.74			
Independence	Male	51	15.69	6.00	101	-1.10	.275
	Female	52	16.96	5.78			
Benevolence	Male	51	19.67	5.22	101	0.92	.359
	Female	52	18.69	5.50			
Leadership	Male	51	12.96	6.29	101	0.62	.537
	Female	52	12.19	6.28			

*significant at .05 level

As can be seen in the above table, on only two of the six interpersonal variables, SUPPORT and CONFORMITY, are differences between male and female basketball players observed. Female athletes seem to value the giving and receiving of support from others more than male athletes do. Ogilvie and Tutko (1971) found that athletes in general had a low need on this characteristic; however, their study involved only male athletes. It may be that females, because of child-rearing practices in this culture which nurture and coddle the female child more than the male child (McPherson, Guppy, & McKay, 1976), carry over this value to adolescent and adult pursuits.

With respect to the CONFORMITY variable, male athletes scored significantly higher than females. Although attitudes toward female involvement in competitive sport are undoubtedly changing, it may still be that the woman who pursues excellence in sport remains, in the eyes of many, somewhat of a nonconformist.

Psycho-Social Variables as Predictors of Athletic Performance

One who is closely affiliated with athletics recognizes certain athletes who appear to lack the physical or physiological prerequisites for skilled performance yet who nevertheless excel in their activity. When this phenomenon occurs, the explanation for success generally

centers around the psychological assets of the athlete (Morgan, 1979). The individual is said to compensate for physiological and physical deficiencies with characteristics such as competitiveness, drive, persistence, ambition, and so forth. If one accepts the premise that these factors are important contributors to overall athletic performance, then it is logical to suggest that performance, as measured by the coach's Most Valuable Player ranking could, at least in part, be predicted by such psycho-social variables. Tables 10 - 13 provide the pertinent data from the stepwise multiple regression analyses which attempted to predict the dependent variable COACH'S PERCENTILE RANKING (COPCTRNK) utilizing, as independent variables, the scores obtained for the ten psycho-social measures. Identical analyses were performed first using only the male athletes, then females only, and finally, the data were analyzed using scores from the combined sample.

As might have been expected given the similarities observed between male and female athletes on the measures reported in the preceding section, the equations generated by the separate regression analyses for males and females were similar. See Tables 10 and 11.

Table 10

Stepwise Regression Procedure for Dependent Variable COACH'S PERCENTILE RANKING Using Psycho-Social Variables for Male Athletes Studied

Step Number 1	Variable entered: SUPPORT			
Standard error= .287	R Square= .076			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	1	.331	.331	4.03*
Residual	49	4.031	.082	
Step 1 Summary				
Variables in the equation		B	F to remove	
SUPPORT		.016	4.03*	
(Constant)		.289		
Step Number 2	Variable entered: BENEVOLENCE			
Standard error= .278	R Square= .147			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	2	.641	.321	4.14*
Residual	48	3.721	.078	
Step 2 Summary				
Variables in the equation		B	F to remove	
SUPPORT		.015	4.08*	
BENEVOLENCE		.015	4.00	
(Constant)		-.002		
Step Number 3	Variable entered: RECOGNITION			
Standard error= .277	R Square= .175			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	3	.763	.254	3.32*
Residual	47	3.599	.077	
Step 3 Summary				
Variables in the equation		B	F to remove	
SUPPORT		.020	5.64*	
BENEVOLENCE		.011	1.64	
RECOGNITION		-.015	1.59	
(Constant)		.170		

Table 10 (continued)

Step Number 4 Variable entered: PERSONAL UNCONCERN
Standard error= .276 R Square= .195

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	4	.849	.212	2.78*
Residual	46	3.514	.076	

Step 4 Summary

Variables in the equation	B	F to remove
SUPPORT	.020	5.72*
BENEVOLENCE	.011	1.87
RECOGNITION	-.015	1.67
PERSONAL UNCONCERN	.017	1.12
(Constant)	-.006	

Step Number 5 Variable entered: WORK
Standard error= .278 R Square= .201

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	5	.878	.176	2.27
Residual	45	3.484	.077	

Step 5 Summary

Variables in the equation	B	F to remove
SUPPORT	.020	5.86*
BENEVOLENCE	.010	1.26
RECOGNITION	-.015	1.68
PERSONAL UNCONCERN	.016	.92
WORK	.010	.38
(Constant)	-.172	

* significant at .05 level

Psycho-social variables emerged as slightly better predictors of the dependent variable for female athletes than for males. Utilizing six independent variables (BENEVOLENCE, COMPETITIVENESS, RECOGNITION, SUPPORT, WORK, AND CONFORMITY), the stepwise regression procedure accounted for approximately 25% of the variability in the dependent variable for females as compared to only 20% for the males using five

psycho-social variables (SUPPORT, BENEVOLENCE, RECOGNITION, PERSONAL UNCONCERN, WORK). The variables SUPPORT, BENEVOLENCE, RECOGNITION, and WORK appeared in both equations although in a somewhat different order. PERSONAL UNCONCERN was the fifth variable that appeared in the regression equation for males (Table 10). COMPETITIVENESS and CONFORMITY were the other contributors in the female equation (Table 11).

Table 11

Stepwise Regression Procedure for Dependent Variable COACH'S PERCENTILE RANKING Using Psycho-Social Variables for Female Athletes Studied

Step Number 1	Variable entered: BENEVOLENCE			
Standard error= .279	R Square= .083			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	1	.295	.295	3.80
Residual	42	3.268	.078	
Step 1 Summary				
Variables in the equation		B	F to remove	
BENEVOLENCE		.015	3.80	
(Constant)		.235		
Step Number 2	Variable entered: COMPETITIVENESS			
Standard error= .278	R Square= .114			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	2	.406	.203	2.63
Residual	41	3.158	.077	
Step 2 Summary				
Variables in the equation		B	F to remove	
BENEVOLENCE		.016	4.58*	
COMPETITIVENESS		.015	1.43	
(Constant)		-.023		

Table 11 (continued)

Step Number 3 — Variable entered: RECOGNITION
Standard error= .274 — R Square= .156

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	3	.556	.185	2.47
Residual	40	3.007	.075	

Step 3 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.012	2.09
COMPETITIVENESS	.023	2.78
RECOGNITION	-.015	2.00
(Constant)	.114	

Step Number 4 — Variable entered: SUPPORT
Standard error= .268 — R Square= .213

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	4	.759	.190	2.64*
Residual	39	2.805	.072	

Step 4 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.011	1.94
COMPETITIVENESS	.026	3.64
RECOGNITION	-.022	3.98
SUPPORT	.014	2.82
(Constant)	-.068	

Step Number 5 — Variable entered: WORK
Standard error= .268 — R Square= .236

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	5	.843	.169	2.35
Residual	38	2.721	.072	

Step 5 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.011	1.76
COMPETITIVENESS	.024	3.05
RECOGNITION	-.024	4.62*
SUPPORT	.013	2.65
WORK	.018	1.17
(Constant)	-.380	

Table 11 (continued)

Step Number 6 Variable entered: CONFORMITY
Standard error= .269 R Square= .247

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	6	.880	.147	2.02
Residual	37	2.683	.072	

Step 6 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.012	2.05
COMPETITIVENESS	.024	3.09
RECOGNITION	-.025	4.80*
SUPPORT	.012	2.21
WORK	.017	1.11
CONFORMITY	-.005	.52
(Constant)	-.295	

* significant at .05 level

As can be seen from the above tables, SUPPORT, BENEVOLENCE, RECOGNITION and PERSONAL UNCONCERN were the most significant predictors for males contributing 19.5% of the explained variability. For female athletes, BENEVOLENCE, COMPETITIVENESS, RECOGNITION, and SUPPORT accounted for approximately 21% of the total variability in the dependent variable.

As might be expected, when the data were analyzed for all subjects, the result was similar. Only 19.3% of the total variability was accounted for using six psycho-social variables: BENEVOLENCE, SUPPORT, RECOGNITION, COMPETITIVENESS, WORK and PERSONAL UNCONCERN (Table 12).

Table 12

Stepwise Regression Procedure for Dependent Variable COACH'S PERCENTILE RANKING Using Psycho-Social Variables for All Subjects

Step Number 1	Variable entered: BENEVOLENCE			
Standard error= .280	R Square= .078			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	1	.622	.622	7.92**
Residual	93	7.307	.079	
Step 1 Summary				
Variables in the equation		B	F to remove	
BENEVOLENCE		.015	7.92**	
(Constant)		.227		
Step Number 2	Variable entered: SUPPORT			
Standard error= .275	R Square= .122			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	2	.971	.485	6.42**
Residual	92	6.959	.076	
Step 2 Summary				
Variables in the equation		B	F to remove	
BENEVOLENCE		.016	9.11**	
SUPPORT		.011	4.61*	
(Constant)		.033		
Step Number 3	Variable entered: RECOGNITION			
Standard error= .272	R Square= .154			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	3	1.221	.407	5.53**
Residual	91	6.708	.074	
Step 3 Summary				
Variables in the equation		B	F to remove	
BENEVOLENCE		.011	3.99*	
SUPPORT		.016	7.51**	
RECOGNITION		-.014	3.40	
(Constant)		.201		

Table 12 (continued)

Step Number 4 Variable entered: COMPETITIVENESS
Standard error= .269 R Square= .177

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	4	1.406	.352	4.85**
Residual	90	6.524	.072	

Step 4 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.011	3.88*
SUPPORT	.017	8.93**
RECOGNITION	-.018	5.15*
COMPETITIVENESS	.016	2.54
(Constant)	-.015	

Step Number 5 Variable entered: WORK
Standard error= .269 R Square= .186

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	5	1.474	.295	4.06**
Residual	89	6.456	.073	

Step 5 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.010	3.18
SUPPORT	.017	8.76**
RECOGNITION	-.019	5.36*
COMPETITIVENESS	.013	1.70
WORK	.011	0.93
(Constant)	-.182	

Step Number 6 Variable entered: PERSONAL UNCONCERN
Standard error= .269 R Square= .193

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	6	1.527	.255	3.50**
Residual	88	6.403	.073	

Step 6 Summary

Variables in the equation	B	F to remove
BENEVOLENCE	.010	3.21
SUPPORT	.018	9.39**
RECOGNITION	-.019	5.60*
COMPETITIVENESS	.015	2.06
WORK	.011	0.92
PERSONAL UNCONCERN	.009	0.74
(Constant)	-.305	

* significant at .05 level
**significant at .01 level

The above analyses represent attempts to utilize selected psycho-social variables as predictors of Most Valuable Player ranking. Given the low observed R^2 values and the high standard error of the estimate values, it seems plausible to state that psycho-social variables alone are relatively poor predictors of a player's worth to his or her team as perceived by the coach via the MVP ranking.

In addition to the amount of variability that the independent variables explain, it is also interesting and informative to examine the unstandardized B coefficients designated for each variable in the final equation. The magnitude of these values is irrelevant given that the variables may be measured on different scales. However, the sign given the coefficient indicates the direction of influence that the independent variable exerts on the dependent variable. It should be noted that the dependent variable consisted of a ranking from 1 to n, where n corresponded to the number of players on each team. The smallest number indicated the player of greatest perceived importance or value to the team. As a result, the direction of influence of the independent variables as indicated by the sign of the unstandardized B coefficients should be interpreted as the opposite of what they appear in the table. The only exception to this is the variable PERSONAL UNCONCERN which is scored in similar fashion to the dependent variable

with a high score indicating a lack of concern for the negative reaction of others to personal achievement.

Given the above explanation, the direction of influence for some of the variables is somewhat puzzling. For example, in the final equation for males, (Table 10, Step 5), the only variables which exert a positive influence on the dependent variable are RECOGNITION and PERSONAL UNCONCERN. That is to say, the more an individual values recognition, the more it may influence performance and the greater will be his or her perceived value to the team. This finding is not surprising. With PERSONAL UNCONCERN, however, it would appear that those players who are least concerned with the negative reactions of their peers turn out to be among the least valuable on the team, and conversely, that the most valuable players are those who are most concerned with the feelings of their peers. On the surface, one might expect that this increased concern for the feelings of one's peers might inhibit performance and thus decrease value. However, as was pointed out earlier, team success is dependent upon cooperation and harmony. It is perhaps true that a lack of concern for peer reaction on the part of a player results in disharmony among team members, thus inhibiting group performance. This would then translate into a lower ranking by coach and teammates.

In looking at the negative influences on the dependent variable, only one, SUPPORT, is not surprising. Predictably, players who value and perhaps require and seek the support and nurturance of others will not emerge at the upper end of the most valuable player continuum.

The remaining two variables which exert negative influence on the dependent variable are BENEVOLENCE and WORK. Presumably, this indicates that players who are most unselfish and those with the greatest desire to work hard are less likely to be most valuable players. The former does not mesh with the "team sport" concept cited earlier; the latter flies in the face of the work ethic and meritocratic principles which form the foundation of sport and of Western society in general. From the direction of the calculated coefficients, one must conclude that too much unselfishness may ultimately be a inhibitor to performance and thus reflect on Most Valuable Player judgements. An explanation for the negative influence of the WORK variable may lie in the fact that players with the greatest desire to work hard may also be those with the most to gain, that is to say, the players with the least physical skill. Players of lesser skill may compensate for their deficiencies with increased desire.

The same explanation might be made with respect to the influence of COMPETITIVENESS in the equation for female

athletes (Table 11, Step 6). The term "competitiveness" is used in much of the psycho-social literature synonymously with "aggression." For example, Pressman (1979) chooses to call competitiveness "refined aggression" (p. 134). When individuals become frustrated in a competitive situation by their inability to perform or to best their opponents, heightened aggression or "competitiveness" is likely to be the result (Berkowitz, 1972). The same principle may be in operation here. That is to say, those athletes of lesser skill are those who are most competitive. As in the case of WORK, or the desire to work hard, such individuals are likely to be those on the team who have the most to gain by their efforts. All of this serves to support the contention by Morgan (1979) that psychological or psycho-social variables exist in delicate balance with, and are supplemental to, physical skills and abilities.

Marrying the Psychological and the Physical Aspects of Performance

When one points out that 20% of a variable can be explained utilizing psycho-social variables as predictors, it should be kept in mind that 80% of the variable remains unaccounted for. Obviously, there are a number of considerations related to the Most Valuable Player concept which were not included in the analysis. Such variables could be of a psycho-social nature but that is unlikely.

Certainly there are other psychological variables, e.g., persistence, aggression, dominance, nurturance and so forth which come to mind that could be incorporated in the equation. However, it is the opinion of the investigator that these would merely supplant variables already included in the analysis. It would seem to be more plausible to venture outside the psycho-social realm in search of additional factors. As Singer (1980) has said, "athletic accomplishments can be attributed to many factors working together in an ideal 'intermix'" (p. 40). The athlete is a multifaceted individual and one cannot understand and therefore predict behavior utilizing measures from a single domain. Sport makes many physical demands on the athlete as well as mental and emotional and the importance of these cannot be ignored.

Tables 13 - 15 provide an indication of what can be accomplished when psycho-social variables are combined with selected skill-related variables collected from the 1981-82 basketball season. Separate analyses for males, females, and all athletes were performed. The skill-related variables entered in the analysis were as follows: (a) PCTGAMES: percentage of games played, (b) FGM: field goals made, (c) FGA: field goals attempted, (d) FGPCT: field goal percentage, (e) FTM: free throws made, (f) FTA: free throws attempted, (g) FTPCT: free throw percentage,

(h) REB: total rebounds, (i) RPG: rebounds per game, (j) PTS: total points, (k) PPG: points per game, (l) ASSIST: total assists, and (m) APG: assists per game. For ease of presentation in the tables and text, the variables will be referred to by their abbreviations.

Table 13, the analysis using male athletes only, explains fully 87.2% of the dependent variable utilizing a combination of skill-related and psycho-social variables (Table 13, Step 11 Summary). For practical purposes the "best" regression equation could be selected from the Step 8 or 9 summary, however, the succeeding steps were included to provide the reader with an indication of the interaction of these variables in the analysis.

Table 13

Stepwise Regression Procedures for Dependent Variable COACH'S PERCENTILE RANKING Using Psycho-Social and Performance Variables for Male Athletes Studied

Step Number 1	Variable entered: PPG			
Standard error= .159	R Square= .715			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	1	3.119	3.119	122.86**
Residual	49	1.244	.025	
Step 1 Summary				
Variables in the equation		B	F to remove	
PPG		-.058	122.86**	
(Constant)		.870		

Table 13 (continued)

Step Number 2 Variable entered: APG
Standard error= .147 R Square= .761

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	2	3.322	1.662	76.60**
Residual	48	1.041	.022	

Step 2 Summary

Variables in the equation	B	F to remove
PPG	-.048	68.23**
APG	-.062	9.37**
(Constant)	.890	

Step Number 3 Variable entered: RPG
Standard error= .135 R Square= .805

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	3	3.511	1.170	64.60**
Residual	47	.851	.018	

Step 3 Summary

Variables in the equation	B	F to remove
PPG	-.029	13.32**
APG	-.084	18.13**
RPG	-.045	10.45**
(Constant)	.927	

Step Number 4 Variable entered: FGA
Standard error= .130 R Square= .822

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	4	3.586	.897	53.12**
Residual	46	.776	.017	

Step 4 Summary

Variables in the equation	B	F to remove
PPG	-.043	17.84**
APG	-.095	23.26**
RPG	-.056	15.24**
FGA	.001	4.45*
(Constant)	.932	

Table 13 (continued)

Step Number 5 Variable entered: WORK
Standard error= .124 R Square= .841

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	5	3.667	.733	47.50**
Residual	45	.695	.015	

Step 5 Summary

Variables in the equation	B	F to remove
PPG	-.044	19.81**
APG	-.098	26.80**
RPG	-.062	19.63**
FGA	.001	6.49*
WORK	.015	5.27*
(Constant)	.602	

Step Number 6 Variable entered: RECOGNITION
Standard error= .123 R Square= .848

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	6	3.699	.616	40.86**
Residual	44	.664	.015	

Step 6 Summary

Variables in the equation	B	F to remove
PPG	-.046	21.60**
APG	-.098	27.66**
RPG	-.065	21.54**
FGA	.001	8.12**
WORK	.015	4.93*
RECOGNITION	-.007	2.07
(Constant)	.680	

Step Number 7 Variable entered: FGM
Standard error= .120 R Square= .857

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	7	3.737	.534	36.73**
Residual	43	.625	.015	

Step 7 Summary

Variables in the equation	B	F to remove
PPG	-.038	13.05**
APG	-.109	31.30**
RPG	-.063	21.09**
FGA	.003	7.12*
WORK	.015	5.00*
RECOGNITION	-.009	3.44
FGM	-.004	2.66
(Constant)	.688	

Table 13 (continued)

Step Number 8 Variable entered: PCTGAMES
Standard error= .119 R Square= .863

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	8	3.765	.471	33.09**
Residual	42	.597	.014	

Step 8 Summary

Variables in the equation	B	F to remove
PPG	-.037	12.55**
APG	-.104	27.99**
RPG	-.056	14.97**
FGA	.004	7.76**
WORK	.012	3.21
RECOGNITION	-.008	3.23
FGM	-.004	2.94
PCTGAMES	-.154	1.95
(Constant)	.832	

Step Number 9 Variable entered: SUPPORT
Standard error= .118 R Square= .869

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	9	3.789	.421	30.12**
Residual	41	.573	.014	

Step 9 Summary

Variables in the equation	B	F to remove
PPG	-.036	12.03**
APG	-.102	27.37**
RPG	-.056	15.24**
FGA	.004	8.53**
WORK	.012	3.51
RECOGNITION	-.011	4.85*
FGM	-.005	3.28
PCTGAMES	-.157	2.06
SUPPORT	.005	1.72
(Constant)	.768	

Table 13 (continued)

Step Number 10 Variable entered: FTPCT
Standard error= .119 R Square= .871

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	10	3.799	.380	26.99**
Residual	40	.563	.014	

Step 10 Summary

Variables in the equation	B	F to remove
PPG	-.037	12.18**
APG	-.102	27.34**
RPG	-.055	14.03**
FGA	.004	8.34**
WORK	.013	3.76
RECOGNITION	-.010	4.11*
FGM	-.005	3.33
PCTGAMES	-.170	2.35
SUPPORT	.005	1.77
FTPCT	.081	.72
(Constant)	.712	

Step Number 11 Variable entered: PERSONAL UNCONCERN
Standard error= .119 R Square= .872

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	11	3.806	.346	24.26**
Residual	39	.556	.014	

Step 11 Summary

Variables in the equation	B	F to remove
PPG	-.038	12.44**
APG	-.100	24.82**
RPG	-.053	12.57**
FGA	.004	8.48**
WORK	.012	3.34
RECOGNITION	-.011	4.32*
FGM	-.005	3.45
PCTGAMES	-.172	2.36
SUPPORT	.005	1.86
FTPCT	.082	.73
PERSONAL UNCONCERN	.005	.48
(Constant)	.674	

* significant at .05 level
**significant at .01 level

Much of the variability is exhausted in the first few steps by the following skill-related variables: (a) PPG, (b) APG, and (c) RPG. These three variables alone explain 80.5% of the variability in the dependent variable. Put another way, the players recording the highest points, assists, and rebound averages were perceived to be the most valuable to the team. While this finding may hardly be earth-shattering, it does serve to point out the relative place of psycho-social variables in the athletic experience, at least for male athletes.

For female athletes (Table 14), the prediction process is not as successful although 74.9% of the variability is accounted for with only six variables: (a) PPG, (b) APG, (c) MASTERY, (d) PERSONAL UNCONCERN, (e) PCTGAMES, and (f) FGM.

Table 14

Stepwise Regression Procedure for Dependent Variable COACH'S PERCENTILE RANKING Using Psycho-Social and Performance Variables for Female Athletes Studied

Step Number 1	Variable entered: PPG			
Standard error= .182	R Square= .610			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	1	2.173	2.173	65.60**
Residual	42	1.391	.033	
Step 1 Summary				
Variables in the equation		B	F to remove	
PPG		-.047	65.60**	
(Constant)		.867		

Table 14 (continued)

Step Number 2 Variable entered: APG
Standard error= .168 R Square= .674

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	2	2.401	1.200	42.31**
Residual	41	1.163	.028	

Step 2 Summary

Variables in the equation	B	F to remove
PPG	-.041	49.77**
APG	-.078	8.04**
(Constant)	.921	

Step Number 3 Variable entered: MASTERY
Standard error= .161 R Square= .709

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	3	2.526	.842	32.47**
Residual	40	1.037	.026	

Step 3 Summary

Variables in the equation	B	F to remove
PPG	-.043	58.36**
APG	-.068	6.66*
MASTERY	.012	4.85*
(Constant)	.668	

Step Number 4 Variable entered: PERSONAL UNCONCERN
Standard error= .157 R Square= .729

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	4	2.599	.650	26.28**
Residual	39	.964	.025	

Step 4 Summary

Variables in the equation	B	F to remove
PPG	-.044	63.15**
APG	-.067	6.68*
MASTERY	.012	5.02*
PERSONAL UNCONCERN	-.014	2.96
(Constant)	.810	

Table 14 (continued)

Step Number 5 Variable entered: PCTGAMES
Standard error= .156 R Square= .742

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	5	2.643	.529	21.83**
Residual	38	.920	.024	

Step 5 Summary

Variables in the equation	B	F to remove
PPG	-.039	35.24**
APG	-.060	5.35*
MASTERY	.011	3.70
PERSONAL UNCONCERN	-.012	2.05
PCTGAMES	-.245	1.81
(Constant)	.991	

Step Number 6 Variable entered: FGM
Standard error= .155 R Square= .749

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	6	2.670	.445	18.42**
Residual	37	.894	.024	

Step 6 Summary

Variables in the equation	B	F to remove
PPG	-.056	10.41**
APG	-.060	5.31*
MASTERY	.010	3.48
PERSONAL UNCONCERN	-.011	1.54
PCTGAMES	-.261	2.04
FGM	.001	1.10
(Constant)	1.010	

* significant at .05 level
**significant at .01 level

Once again, points per game and assists per game emerge as the best predictors of Most Valuable Player ranking. However, it is important to note that psycho-social variables (MASTERY and PERSONAL UNCONCERN) are entered in Steps 3 and 4. A look at the unstandardized B coefficients in the final equation, Step 6 Summary, Table 14, reveals a negative

relationship for the variable MASTERY to the dependent variable similar to the one discussed for WORK and COMPETITIVENESS previously. For PERSONAL UNCONCERN, the effect is just the opposite of that observed earlier. PERSONAL UNCONCERN in this analysis is negatively associated with the dependent variable. This may be interpreted to mean that athletes exhibiting the least concern for the negative reactions of their teammates are most likely to appear as more valuable players for the female basketball players.

For the final analysis, the samples were combined to include both male and female athletes. The results are presented in Table 15.

Table 15

Stepwise Regression Procedure for Dependent Variable COACH'S PERCENTILE RANKING Using Psycho-Social and Performance Variables for All Subjects

Step Number 1	Variable entered: PPG			
Standard error= .174	R Square= .646			
Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	1	5.126	5.126	170.05**
Residual	93	2.803	.030	
Step 1 Summary				
Variables in the equation		B	F to remove	
PPG		-.051	170.05**	
(Constant)		.860		

Table 15 (continued)

Step Number 2 Variable entered: APG
Standard error= .158 R Square= .710

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	2	5.633	2.817	112.85**
Residual	92	2.296	.025	

Step 2 Summary

Variables in the equation	B	F to remove
PPG	-.043	112.29**
APG	-.073	20.32**
(Constant)	.898	

Step Number 3 Variable entered: PCTGAMES
Standard error= .151 R Square= .740

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	3	5.867	1.956	86.30**
Residual	91	2.062	.023	

Step 3 Summary

Variables in the equation	B	F to remove
PPG	-.035	62.22**
APG	-.064	16.84**
PCTGAMES	-.318	10.33**
(Constant)	1.109	

Step Number 4 Variable entered: MASTERY
Standard error= .147 R Square= .754

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	4	5.982	1.496	69.13**
Residual	90	1.947	.022	

Step 4 Summary

Variables in the equation	B	F to remove
PPG	-.037	69.60**
APG	-.064	17.34**
PCTGAMES	-.276	7.86**
MASTERY	.008	5.33*
(Constant)	.913	

Table 15 (continued)

Step Number 5 Variable entered: FGA
Standard error= .145 R Square= .763

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	5	6.046	1.209	57.15**
Residual	89	1.883	.021	

Step 5 Summary

Variables in the equation	B	F to remove
PPG	-.050	34.04**
APG	-.066	18.71**
PCTGAMES	-.308	9.63**
MASTERY	.008	5.17*
FGA	.001	3.02
(Constant)	.940	

Step Number 6 Variable entered: RPG
Standard error= .143 R Square= .774

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	6	6.140	1.023	50.81**
Residual	88	1.790	.020	

Step 6 Summary

Variables in the equation	B	F to remove
PPG	-.044	25.20**
APG	-.081	24.04**
PCTGAMES	-.258	6.67*
MASTERY	.009	6.97**
FGA	.001	4.90*
RPG	-.020	4.58*
(Constant)	.898	

Step Number 7 Variable entered: SUPPORT
Standard error= .142 R Square= .779

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	7	6.175	.882	43.74**
Residual	87	1.755	.020	

Step 7 Summary

Variables in the equation	B	F to remove
PPG	-.043	23.92**
APG	-.080	23.45**
PCTGAMES	-.260	6.82*
MASTERY	.010	8.03**
FGA	.001	4.22*
RPG	-.018	3.89
SUPPORT	.004	1.75
(Constant)	.818	

Table 15 (continued)

Step Number 8 Variable entered: RECOGNITION
Standard error= .142 R Square= .783

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	8	6.208	.776	38.76**
Residual	86	1.722	.020	

Step 8 Summary

Variables in the equation	B	F to remove
PPG	-.044	24.84**
APG	-.077	21.59**
PCTGAMES	-.258	6.77*
MASTERY	.009	7.11**
FGA	.001	4.84*
RPG	-.018	3.82
SUPPORT	.005	3.02
RECOGNITION	-.005	1.64
(Constant)	.847	

Step Number 9 Variable entered: FTA
Standard error= .141 R Square= .786

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	9	6.236	.693	34.77**
Residual	85	1.694	.020	

Step 9 Summary

Variables in the equation	B	F to remove
PPG	-.040	19.67**
APG	-.073	18.68**
PCTGAMES	-.233	5.31*
MASTERY	.009	6.89*
FGA	.001	4.69*
RPG	-.014	2.21
SUPPORT	.006	3.26
RECOGNITION	-.005	1.91
FTA	-.001	1.41
(Constant)	.836	

Table 15 (continued)

Step Number 10 Variable entered: PERSONAL UNCONCERN
Standard error= .142 R Square= .787

Analysis of Variance	DF	Sum of Squares	Mean Square	F
Regression	10	6.239	.624	31.01**
Residual	84	1.690	.020	

Step 10 Summary

Variables in the equation	B	F to remove
PPG	-.041	19.60**
APG	-.074	18.62**
PCTGAMES	-.231	5.15*
MASTERY	.009	6.92*
FGA	.001	4.58*
RPG	-.014	2.14
SUPPORT	.005	2.90
RECOGNITION	-.005	1.82
FTA	-.001	1.36
PERSONAL UNCONCERN	-.002	.17
(Constant)	.859	

* significant at .05 level
**significant at .01 level

Predictably, the percentage of variability which can be explained by the independent variables falls somewhere between those values found in the separate analyses for males and females. The final equation (Table 15, Step 10 Summary) utilizes ten independent variables (PPG, APG, PCTGAMES, MASTERY, FGA, SUPPORT, RECOGNITION, FTA and PERSONAL UNCONCERN), and accounts for almost 79% (R^2=.787) of the variability in the dependent variable.

Once more, points per game (PPG) is the first variable entered in the analysis. By itself it accounts for 64.6% of the variance. Assists per game (APG) explains an additional 6.4% of the variability raising the total to

71 percent. PCTGAMES is the third variable entered in the analysis contributing an additional 3 percent. Psycho-social variables, MASTERY, begin to be incorporated in Step 4, and SUPPORT, RECOGNITION and PERSONAL UNCONCERN are added in subsequent steps.

What these analyses tell us is that, given the correct combination of psycho-social and skill-related variables, one can predict, with a fairly high degree of accuracy, for male and female basketball players, the order in which players can be ranked in terms of their value to their respective teams. Skill-related variables are most highly correlated with the coach's Most Valuable Player rankings but certain psycho-social variables are interspersed in the final equations as well. Coaches obviously base their rankings primarily on such standard performance variables as points, assists, and rebounds per game and to a lesser degree on psychological variables. This finding is somewhat suprising given the emphasis that many coaches seem to place on the intangible qualities such as leadership, competitiveness, desire and so forth. One wonders if they are conscious of this.

Some Further Speculations

This research sought to determine whether athletic performance as represented by the coach's Most Valuable Player

ranking, could be predicted by a predetermined set of psychological and skill-related variables. The findings support the contention that such prediction may be made given the "correct" variables.

It has been said that athletes who lack physical abilities are able to compensate for those deficiencies with certain psychological attributes. Conversely, athletes apparently lacking the psycho-social prerequisites to athletic performance still experience a high degree of success as a result of their physical prowess. Therefore, Morgan's (1979) contention that "physiological or psychological data alone would never predict success in a highly reliable fashion" (p.173) is strongly supported by the findings of this study.

It is important to note that, although it is possible to account for a large portion of the variability in the dependent variable, 15 - 20% of the variability remains unexplained. There are a number of possible explanations for this. First, and most obviously, there may be additional variables that have not been taken into consideration in the data collection. Perhaps these could be drawn from the sociological, physiological, or motor domain. Examples might include family size, birth order, size of community, reaction time, movement time, self-esteem, body type, O^2 uptake, static leg strength, and so

forth. Second, it is conceivable, that with respect to the notion of the Most Valuable Players, the whole may be greater than the sum of the parts. That is to say, certain "intangibles" inherent in the athletic experience such as chance, emotion, spectator behavior, and so forth, may interact in such a way as to create an effect that is greater than one might expect in merely looking at the component parts. In the world of sport, players are often observed performing feats for which they don't appear to have the tools, either psychological or physical.

A third explanation may lie in the disparity that exists between the scores one observes on so-called "paper-and-pencil" tests and actual behavior as it is manifested as performance in the athletic arena. Whether or not the ultimate behavior which occurs in the highly charged, emotion-filled atmosphere that typifies collegiate athletics can be represented in a paper-and-pencil test administered in the classroom setting is open to debate. Such tests, although designed to measure certain salient characteristics which would seem to be germane to the sport setting, were not in fact created with athletes and athletics in mind and may not be valid for the assessment utilized in the present study.

Still another factor which may be adversely affecting the results of this study may lie in the demographic

characteristics of the sample. The entire issue of whether or not a class difference or a racial difference exists with respect to the variables under study warrants consideration. It would be interesting to see if the results would hold were the sample subclassified according to socioeconomic status and race.

Finally, it should be acknowledged that the concept of Most Valuable Player is an abstract one. It is a human-oriented creation that is subject to change and fluctuation according to who is examining it and what the current levels of expectation and standards of excellence may be. Such a loosely defined and abstract concept may truly defy more precise predictability.

Given the findings of this study and considering the extremely complex and diverse nature of the athletic experience, it becomes all the more apparent that an integration of all facets of behavior in sport is necessary to achieve a complete understanding of the athlete. The challenge to those who carry out research in sport is clear.

CHAPTER V

SUMMARY AND CONCLUSIONS

McClelland (1961) has designated this as an "achieving society." Rewards accrue to those who exhibit excellence in their chosen fields of endeavor. Perhaps nowhere is this more apparent than in the competitive athletic arena.

Athletic achievement can be attributed to a plethora of sociological, psychological, and physical factors which exist in a complex working relationship. So complex is this relationship that we have, as yet, been unable to identify its component parts.

Although one of the fascinations of sport is its susceptibility to chance and its unpredictability, it behooves us as teachers, coaches, and physical educators to continue to study the human being in sports in an effort to achieve a better understanding of the athlete. Such an understanding will enable us to target for instruction and motivation the areas which merit the greatest attention by the magnitude of their contribution to the athletic experience.

Summary

This investigation represents an attempt to identify the influence of a selected number of psycho-social

variables on the phenomenon of athletic performance as signified by the concept of Most Valuable Player for a sample of male and female intercollegiate basketball players. The data were collected on ten psycho-social variables utilizing two direct questionnaires: (a) the Work and Family Orientation Questionnaire (Helmreich & Spence, 1978) and (b) Gordon's (1976) Survey of Interpersonal Values. In addition, 13 skill-related indices were obtained for each player from 1981-82 cumulative statistics.

Stepwise multiple regression analysis was employed to examine relationships among the variables. Separate analyses were conducted for males, females and the combined sample. Comparison between males and females utilized two-sample T-tests for the psycho-social variables. The major findings are summarized.

For the male athletes studied, the variables SUPPORT, BENEVOLENCE, RECOGNITION, PERSONAL UNCONCERN, and WORK accounted for 20.1% of the variability in the dependent variable. SUPPORT and BENEVOLENCE were the most significant predictors explaining, by themselves, 14.7 percent. SUPPORT, BENEVOLENCE, and WORK were negatively related to the Most Valuable Player concept while RECOGNITION and PERSONAL UNCONCERN had positive contributions to the dependent variable.

For female athletes, the results were similar. The variables BENEVOLENCE, COMPETITIVENESS, RECOGNITION,

SUPPORT, WORK, and CONFORMITY accumulated 24.7% of the explained variability. BENEVOLENCE, COMPETITIVENESS, RECOGNITION, and SUPPORT were the most significant (21.3%) predictors. For female basketball players, RECOGNITION and CONFORMITY were positively related to athletic performance while BENEVOLENCE, COMPETITIVENESS, SUPPORT, and WORK showed a negative relationship to the Most Valuable Player construct.

Considerably greater success in the prediction equation was attained when a number of skill-related variables were incorporated into the analysis. For male basketball players the variables points per game (PPG), assists per game (APG), rebounds per game (RPG), field goals attempted (FGA), WORK, RECOGNITION, field goals made (FGM), percentage of games played (PCTGAMES), SUPPORT, free throw percentage (FTPCT), and PERSONAL UNCONCERN explained 87.2% of the variability. PPG, APG, and RPG were the most significant predictors accounting for 80.5 percent.. PPG, by itself, explained 71.5% of the dependent variable for male athletes.

The prediction equation was not as successful for female athletes as for their male counterparts. However, for females, psycho-social variables were incorporated at an earlier point in the analysis. Once again points per game (PPG), and assists per game (APG) were the most significant predictors explaining 67.4% of the dependent

variable. MASTERY and PERSONAL UNCONCERN were the next variables added, bringing the total to 72.9 percent. Percentage of games played (PCTGAMES) and field goals made (FGM) rounded out the analysis bringing the total explained variability to 74.9 percent.

What these analyses indicate is that the psychosocial variables, in and of themselves, are poor predictors of athletic performance as measured by the coach's MVP ranking. However, when combined with a number of skill-related variables, certain of these psycho-social variables (WORK, RECOGNITION, SUPPORT, MASTERY, and PERSONAL UNCONCERN) provide significant contributions to the analyses, particularly for females.

A more significant finding, perhaps, than those noted above, was the fact that these samples of male and female athletes were so similar with respect to the psychosocial variables studied. No differences were observed on any of the achievement component variables measured by the Work and Family Orientation Questionnaire. On only two of the six values measured by Gordon's Survey of Interpersonal Values were significant differences computed. Females indicated a higher tendency for the giving and receiving of SUPPORT from others and males emerged as having a higher regard for CONFORMITY to rules and regulations. Coakley (1978) postulated that equality

of opportunity for women in sport would be realized when the following are observed:

1. Changes in sex role expectations for women and in the traditional definitions of the demands and consequenses of sport involvement.

2. Elimination of unfounded fears related to the psychological consequences of the participation of women in strenuous physical activities.

3. Restructuring of organizations sponsoring sport and providing facilities for participation so that resources and opportunities are more equitably distributed between men and women (p. 260).

The results of this investigation add credence to the contention that these changes are occurring. Clearly, there is still a long way to go; however, at least attitudes toward the involvement of females in sport may have changed enough to allow women to participate free of the stigma which has accompanied female involvement in traditionally male-dominated activities.

Conclusions

The following conclusions are drawn from data collected at the completion of the 1981-82 college basketball season from 54 male and 53 female basketball players competing for 14 teams from ten schools affiliated either with NCAA Division III, NAIA, or AIAW.

1. WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP are not significant predictors of perceived athletic performance as signified by the coach's Most

Valuable Player ranking for male collegiate basketball players. The variables SUPPORT, BENEVOLENCE, RECOGNITION, PERSONAL UNCONCERN, and WORK accounted for only 20.1% of the dependent variable.

2. WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, SUPPORT, CONFORMITY, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP are not significant predictors of perceived athletic performance as signified by the coach's Most Valuable Player ranking for female collegiate basketball players. The variables BENEVOLENCE, COMPETITIVENESS, RECOGNITION, SUPPORT, WORK, and CONFORMITY accounted for only 24.7% of the dependent variable.

3. There are no signfficant differences between male collegiate basketball players and female collegiate basketball players with respect to the variables WORK, MASTERY, COMPETITIVENESS, PERSONAL UNCONCERN, RECOGNITION, INDEPENDENCE, BENEVOLENCE, and LEADERSHIP.

4. A significant difference between male collegiate basketball players and female collegiate basketball players is observed on the variables SUPPORT and CONFORMITY.

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APPENDIX A

Initial Letter To Subjects

THE UNIVERSITY OF NORTH CAROLINA
AT GREENSBORO

School of Health, Physical Education, Recreation, and Dance

Dear

I am a graduate student in physical education at the University of North Carolina - Greensboro. Your athletic director and coaches have given me permission to contact you about helping me with my doctoral research. Many researchers have attempted to study the NCAA Division I or professional athlete, yet few have bothered to investigate the individual, such as yourself, who represents the vast majority of student-athletes in this country -- the NCAA Division III or NAIA athlete.

In the next couple of days, you will be receiving an envelope containing two very short questionnaires. Enclosed with the questionnaires will be a third procedure where you will be asked to rank your 1981-82 teammates in terms of their value to the team. The entire process will take less than 30 minutes to complete.

What's in this for you? Well, besides the opportunity to help a fellow student and to participate in what should be a very meaningful project I am prepared to offer you an excellent chance at winning a new

12" BLACK AND WHITE PORTABLE TELEVISION SET,

for your dorm or apartment, valued at over $100.00. Your odds of winning will depend upon how many people respond but they will be approximately 1 in 130, and perhaps less. You won't find those kind of odds anywhere for a prize like this.

Your participation is entirely voluntary. Many of your teammates and opponents will be participating and, obviously, the project will not be as meaningful without your involvement. I assure you that your answers will be held in strictest confidence and that the questionnaires will be handled only by myself. No names of institutions or individuals will appear in the final report.

Please give some thought to participating. I shall assume that by completing and returning the questionnaires you will have indicated your consent to voluntarily participate in the study. Thank you for your cooperation.

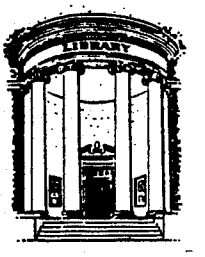
Sincerely,

Jim Lidstone

GREENSBORO, NORTH CAROLINA/27412

APPENDIX B

Cover Letter



THE UNIVERSITY OF NORTH CAROLINA
AT GREENSBORO

School of Health, Physical Education, Recreation, and Dance

Dear

Enclosed you will find the two questionnaires and the ranking procedure which I promised to send. Please take a few moments of your time now to complete the instruments and enclose them in the stamped return envelope which I have provided for your use. The entire process should take less than 30 minutes to complete.

You will also find enclosed, an entry blank which you must complete in order to be eligible to win the new 12" black and white portable television set. In order to be entered in the draw, I must receive your entry form and all completed instruments by,

MAY 15, 1982.

Be sure to include your home address and telephone number so that I can contact you if you win.

There are three parts to the study: (a) the Ranking Procedure, (b) the Work and Family Orientation Questionnaire, and (c) the Survey of Interpersonal Values. It does not matter which you complete first but please read the instructions which accompany each instrument very carefully before you begin.

Once again, thank you for your time and cooperation.

Sincerely,

Jim Lidstone

GREENSBORO, NORTH CAROLINA/27412

APPENDIX C

Player's Ranking Procedure

Ranking Procedure

Below you will find a list of all of your teammates, including yourself, for the 1981-82 season. The list was compiled by your athletic department. In the space provided beside each name, including your own name, place a number indicating the value of that player to your team this past season. The number 1 will indicate the player which you felt was "most valuable" to your team, and the number will indicate the player which you felt was "least valuable" to your team. If there are two players whose relative worth to the team was identical, assign them the same rank but please do not assign the same rank to more than two players.

	Rank	Team Members
1="most valuable" ="least valuable"	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____

APPENDIX F

Letter To Coaches of Teams Not Included

THE UNIVERSITY OF NORTH CAROLINA
AT GREENSBORO

School of Health, Physical Education, Recreation, and Dance

June 4, 1982

Dear

Thank you for taking the time to speak with me regarding my doctoral research project. The questionnaires were sent to your players, however, I am unable to include your team in the study since fewer than the necessary 50% responded.

Thanks again for your assistance. If you are still interested, I would be most happy to share the results of the study with you once it is completed.

Sincerely,

James E. Lidstone

GREENSBORO, NORTH CAROLINA/27412

APPENDIX G

Letter To Coaches of Teams Included

THE UNIVERSITY OF NORTH CAROLINA
AT GREENSBORO

School of Health, Physical Education, Recreation, and Dance

June 4, 1982

Dear

Thank you for consenting to be a part of my doctoral research. Your players have filled out questionnaires which will generate scores on certain socio-psychological variables such as competetiveness, persistence, leadership, benevolence, need for support, need for recognition, independence, conformity, etc., which are often associated with athletic performance.

A vital part of the research is to obtain the coach's "most valuable" player ranking so that these rankings may be compared to the players' scores on the variables under investigation. This will enable me to determine the extent to which these variables actually influence athletic performance.

Enclosed you will find the ranking procedure and a stamped, addressed envelope which I have provided for your use. If you have not already done so, I would appreciate it if you could enclose a copy of the team statistics from the 1981-82 season. Please be assured that your rankings will be held in strictest confidence and will be seen by no-one other than myself. No names of individuals or institutions will appear in the final report. If you so desire, I would be most pleased to share with you the results of the study. Simply check the appropriate statement at the bottom of the ranking sheet.

Thank you, once again, for your cooperation. If you have any questions, please do not hesitate to call me at (919) 454-6343. I look forward to hearing from you.

Sincerely,

James E. Lidstone

APPENDIX H

Coach's Ranking Procedure

Coach's Ranking

Below you will find an alphabetized list of your players from the 1981-82 season. In the space provided beside each name, place a number indicating the value of that player to your team this past season. The number 1 will indicate the player which you felt was "most valuable" to your team, and the number will indicate the player which you felt was "least valuable" to your team. Please rank all players. If there are two players whose relative worth to the team was identical, assign them the same rank but please do not assign the same rank to more than two players.

	Rank	Team Member
1="most valuable ="least valuable	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____
	____	_____

Check one:

I wish to be informed of the results of the study.....____

I do not wish to be informed of the results.....____

APPENDIX I

The Data

RAW DATA FOR MALE SUBJECTS

PLRNK	CORNK	PCTGAMES	WORK	MAST	COMP	PERSUNC	SUPP	CONF	RECOG	IND	BENEV	LEAD
500	500	1000	19	20	15	9	26	17	18	2	16	11
120	200	1000	22	17	15	13	10	27	8	16	23	6
240	100	1000	24	26	18	8	1	22	12	13	14	28
760	800	500	23	20	15	7	13	19	9	11	30	8
580	600	846	24	24	18	12	10	23	4	22	14	17
442	500	640	17	14	9	13	14	14	5	29	15	13
342	400	1000	17	20	17	11	12	15	13	14	13	23
871	700	840	22	21	17	10	18	14	17	9	20	12
100	100	1000	23	20	16	12	11	10	8	21	15	25
717	600	720	23	27	19	12	11	28	8	15	21	7
904	1200	480	21	25	16	12	11	5	9	26	23	14
1117	1100	400	20	24	15	5	**	**	**	**	**	**
383	300	1000	14	15	10	8	10	14	14	20	16	13
708	800	840	18	20	19	7	9	16	9	17	22	17
250	200	1000	18	20	15	13	15	15	11	12	27	7
1175	900	600	23	20	12	12	13	29	8	10	23	7
850	1000	600	24	26	18	10	8	11	3	25	24	19
800	800	875	15	28	14	10	17	18	5	12	21	17
858	900	625	23	22	14	11	19	16	15	9	25	6
117	150	1000	19	20	16	11	19	4	21	23	6	17
208	150	1000	22	22	16	1	11	16	3	17	26	17
425	300	958	23	21	15	6	13	15	9	20	20	13
483	400	958	21	20	8	7	21	8	5	20	19	16
744	150	1000	23	20	13	11	10	19	10	18	17	13
144	300	1000	24	22	18	3	**	**	**	**	**	**
350	400	963	24	30	15	12	19	9	12	9	21	20
838	1100	889	18	19	14	9	23	17	15	6	19	10
1094	1300	444	23	24	16	9	22	6	12	15	15	20
769	800	1000	17	17	17	10	9	18	8	26	5	24
806	900	926	22	17	20	8	13	13	16	23	16	9
1225	1200	222	24	26	18	9	21	14	9	10	29	7
1275	1400	185	23	16	10	10	15	20	7	19	24	5
221	300	970	24	26	15	8	7	9	10	19	23	22
714	800	1000	20	17	11	8	11	22	10	16	23	8
1136	1200	727	24	25	16	14	13	3	9	20	26	19
386	400	848	21	22	16	9	16	15	12	12	14	21
836	900	818	23	19	13	12	**	**	**	**	**	**
1036	1000	879	21	20	14	12	24	10	12	11	16	14
936	700	939	17	6	15	8	17	14	10	19	16	14
471	200	1000	22	20	17	7	12	24	13	11	16	14
1057	1100	939	22	18	15	9	15	22	8	18	21	6
660	800	704	24	23	17	12	12	18	8	11	18	23
720	700	889	24	23	12	10	11	24	7	14	20	11
140	200	1000	19	17	16	11	19	6	13	11	22	16
280	300	1000	24	20	19	11	23	14	12	14	21	6
420	400	1000	24	26	16	10	14	17	4	22	27	6
180	100	1000	21	18	15	12	9	20	9	15	23	14
271	100	960	19	19	15	6	11	22	5	24	21	7
300	300	600	24	22	16	9	16	21	16	7	21	9
643	800	840	24	23	18	10	23	13	9	20	22	3
507	600	1000	21	17	17	5	22	17	9	7	24	11
429	400	1000	24	15	17	9	18	21	17	13	10	6
1086	1100	280	19	14	13	7	19	24	12	7	22	6
507	500	960	22	21	16	13	13	24	11	20	18	4

RAW DATA FOR FEMALE SUBJECTS

PLRNK	CORNK	PCTGAMES	WORK	MAST	COMP	PERSUNC	SUPP	CONF	RECOG	IND	BENEV	LEAD
400	300	944	24	22	12	5	8	10	3	25	23	21
313	450	944	24	23	20	5	22	3	10	22	22	11
763	900	833	21	28	11	14	16	10	8	16	27	13
688	700	944	23	17	13	11	20	10	12	16	18	14
100	100	1000	23	20	8	9	19	7	18	11	19	16
875	800	500	19	17	14	8	22	1	14	25	17	11
613	600	1000	22	26	14	11	22	11	15	17	14	11
269	200	944	24	26	19	3	13	18	8	12	27	12
829	900	762	21	25	15	10	25	5	9	20	19	8
643	600	857	20	29	20	15	15	19	7	20	17	12
686	700	905	19	17	11	15	8	24	5	13	25	15
379	400	1000	24	19	14	12	14	14	10	21	23	8
829	800	429	21	16	19	8	23	19	14	13	19	2
414	300	952	22	14	11	12	22	9	10	24	16	9
129	100	857	16	28	6	14	9	25	1	19	25	11
293	500	1000	22	21	16	8	10	15	11	23	17	13
119	100	1000	18	23	15	6	18	16	10	23	13	10
769	400	1000	20	17	9	10	19	23	10	12	22	4
513	600	759	24	19	15	3	16	19	9	26	10	10
225	200	1000	24	25	12	12	13	8	17	11	21	20
481	500	1000	23	23	18	13	18	11	21	16	8	16
875	1000	621	23	27	18	12	8	19	5	22	25	11
738	700	655	24	10	13	12	20	11	12	15	20	12
975	1200	586	24	30	16	8	10	9	3	25	27	16
158	100	1000	23	23	11	10	19	14	14	19	11	13
933	1000	762	19	23	10	8	13	17	5	20	24	11
183	300	1000	19	15	17	9	24	19	15	6	20	4
633	500	1000	24	22	18	6	27	4	16	12	12	19
583	700	1000	24	24	15	11	22	22	11	13	15	7
325	200	952	22	20	17	8	22	11	10	13	28	6
125	100	960	24	17	15	13	3	20	13	18	13	23
288	200	880	23	20	14	6	15	21	7	18	26	3
500	300	1000	16	18	12	9	23	16	7	14	22	8
300	600	880	20	22	19	5	14	12	10	22	20	10
588	800	960	23	23	13	6	18	20	7	16	18	10
345	200	1000	13	25	20	10	7	14	13	16	10	29
1085	1100	643	23	22	17	6	26	17	19	7	18	3
715	700	1000	23	23	13	12	18	7	15	11	18	20
735	600	1000	22	16	13	10	21	15	12	15	23	1
100	100	1000	22	21	13	9	16	3	11	29	9	22
855	900	643	22	24	18	10	16	10	19	9	28	8
355	500	1000	24	26	16	9	16	22	10	14	22	16
1015	1000	607	22	18	9	12	18	9	4	28	15	16
325	400	1000	24	23	17	7	13	13	13	25	11	15
650	800	500	23	24	17	7	21	15	16	19	12	7
250	400	950	23	23	18	12	16	15	18	8	12	21
1014	1000	500	24	22	19	7	15	21	10	11	24	9
400	300	1000	21	19	14	6	18	15	16	15	23	3
567	500	1000	22	17	12	7	17	24	12	12	19	6
186	100	1000	23	16	18	7	23	14	22	7	12	12
471	600	950	23	24	17	8	13	10	7	15	18	24
833	800	1000	16	10	10	13	16	3	11	23	15	22
1050	1100	600	23	20	17	6	**	**	**	**	**	**