

PERSONALITY TRAITS AS COMPARED TO PERFORMANCE AREAS OF BASKETBALL
PLAYERS IN THE SOUTHWEST PREPARATORY CONFERENCE
OF THE 1977-78 SEASON

THESIS

SUBMITTED TO THE GRADUATE COUNCIL OF
SOUTHWEST TEXAS STATE UNIVERSITY
IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS

FOR THE DEGREE OF
MASTER OF EDUCATION

BY

JAMES SLAUGHTER
B.S. IN EDUCATION

SAN MARCOS, TEXAS
OCTOBER, 1978

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Need for the Study	2
Definition of Terms	4
Statement of the Problem	8
Delimitations of the Study	8
Limitations of the Study	9
Basic Assumptions	9
II. REVIEW OF RELATED LITERATURE	10
Summary	35
III. DESIGN AND PROCEDURES	40
Overview of Research Procedures	40
Variables	41
Subjects	41
Tests Used in the Study	42
Collection of the Data	46
Treatment of the Data	48
IV. PRESENTATION AND ANALYSIS OF DATA	51
Predictor Variables	51
Criterion Variables	51
Zero-Order Correlations	53

Chapter	Page
Inter-correlations among Personality Traits	60
Multiple Correlation Coefficients and Regression Equations	63
Discussion	72
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . .	80
Summary	80
Conclusions	81
Recommendations	81
.	
BIBLIOGRAPHY	83

LIST OF TABLES

	Page
1. A Summary of the Coefficients of Stability for High School Boys and Girls	44
2. A Summary of the Kuder-Richardson Formula 21 Reliability Coefficients for High School Boys and Girls	45
3. Means and Standard Deviations of Personality and Performance Traits	49
4. Alphameric Symbols for Personality Variables	52
5. Correlation Coefficients between Field Goal Percentages and Eighteen Personality Traits	54
6. Correlation Coefficients between Free Throw Percentages and Eighteen Personality Traits	55
7. Correlation Coefficients between Rebounds and Eighteen Personality Traits	57
8. Correlation Coefficients between Personal Fouls and Eighteen Personality Traits	58
9. Correlation Coefficients between Assist and Eighteen Personality Traits	59
10. Correlation Coefficients between Scoring Average and Eighteen Personality Traits	61
11. Inter-Correlation Among Personality Performance Traits	64
12. Multiple Correlation Statistics and Regression Equations for Predicting Field Goal Shooting Success from Selected Personality Traits	65
13. Multiple Correlation Statistics and Regression Equations for Predicting Free Throw Shooting Success from Selected Personality Traits	66

	Page
14. Multiple Correlation Statistics and Regression Equations for Predicting Rebounds from Selected Personality Traits	67
15. Multiple Correlation Statistics and Regression Equations for Predicting Personal Fouls from Selected Personality Traits	69
16. Multiple Correlation Statistics and Regression Equations for Predicting Assist from Selected Personality Traits	70
17. Multiple Correlation Statistics and Regression Equations for Predicting Scoring Averages from Selected Personality Traits	71
18. Multiple Correlation Statistics and Regression Equations for Predicting Basketball Achievement Scores from Selected Personality Traits	72

CHAPTER I

INTRODUCTION

A tremendous degree of emphasis in the psychological literature written during the past several decades has been placed upon the identification and evaluation of personality traits. Many of the various personality measuring techniques have been employed by researchers, teachers, clinicians, and coaches while attempting to assess and evaluate the personalities of student athletes. The paramount importance of athletic activity for physical and psychological development has never been disputable; however, in regard to the relationship of these factors, it is not clear how athletic activity is crucial. Although the findings of the few investigations into the relationship of personality and performance in athletic endeavors have not produced conclusive results, the findings that are available form helpful guidelines for the coach working with athletes, for recognizing and understanding that different types of personality traits may have a bearing upon an individual's performance, and for gaining self-understanding on the part of both the athlete and his coach.¹

Recent literature dealing with personality, athletic performance, and individuals has indicated that the issue is of extreme

¹Gary G. Coffman, "Personality as Compared to Performance of Basketball Players in the Southeastern Conference for the 1973-74 Season," (Ed. D. dissertation, University of Mississippi, 1974);

importance and interest to those engaged in competitive athletics at all levels. It has been noted that many conversations between the athletes and their coaches contain numerous references to the type of personality a teammate or opponents exhibit and the manner in which personality traits or characteristics tend to influence the performance of the various individuals and their respective teams.²

Need for the Study

A large number of studies have been done using group personality tests with both high school and college males. One of the more striking aspects of that research has been the coherence of the picture of the athlete which emerges and the corresponding recommendation that additional studies should be conducted to determine whether or not selected personality traits are predictors of athletic participation, performance, and success.³ A number of researchers⁴ have

Brent S. Rushall, "The Demonstration and Evaluation of a Research Model for the Investigation of the Relationship between Personality and Physical Performance Categories," (Ph. D. Dissertation, Indiana University, 1969); Charles Simpson, "Personality Traits and Performance in Women's Gymnastics," (Ph. D. Dissertation, Indiana University, 1974); Robert D. Smith, "An Analysis of the Relationship between Personality Traits and Success in Swimming and Diving," (Master's thesis, Wisconsin State University - La Crosse, 1969), cited by Raymond A. Weiss and Robert N. Singer (eds.), Completed Research in Health, Physical Education and Recreation, vol. 18 (Washington, D.C.: American Association for Health, Physical Education and Recreation National Education Association, (1970), 12:285.

²Bryant J. Cratty, Psychology in Contemporary Sport: Guidelines for Coaches and Athletes. (Englewood Cliffs: Prentice-Hall, Inc. 1973), p. 61.

³T.B. Bentson and John Summerskil, "Relation of Personal Success in Intercollegiate Athletics to Certain Aspects of Personal Adjustment," Research Quarterly 26 (March, 1955): 8-14; Lance Flanagan: "A Study of Some Personality Traits of Different Physical Activity Groups," Research Quarterly 22 (March, 1951): 312-323.

⁴David H. Hunt, "A Cross Racial Comparison of Personality Traits Between Athletes and Nonathletes," Research Quarterly 40 (December, 1969):

written recommendations at the conclusion of their studies which have suggested the need for additional studies which might formulate prediction equations for performance in the various athletic areas because of personality traits.

Ellenburg was a major spokesman in the urging of additional studies in this area. Ellenburg undertook a study to determine the predictive value of selecting physical variables as determinants of competitive performance in high school basketball.⁵ At the conclusion of his study Ellenburg stressed the importance of the need for a similar study utilizing not only skill tests for predicting performance, but utilizing such personality traits as determination, desire, and leadership as predictors of competitive high school basketball performance.

There have been several conflicting studies comparing the personality traits of losing athletes, moderately successful athletes, and highly successful athletes. These studies comparing the relationship of personality traits of athletes and the varying degrees of athletic performance have been difficult to evaluate because the sample groups have often been highly diverse and nonrepresentative.

Kroll and Peterson compared five winning and losing football teams using the Cattell Sixteen Personality Factor Questionnaire. They found that the winners appeared self-assured, had greater degrees

7-4-705: Brent S. Rushall, "The Demonstration and Evaluation of a Research Model for the Investigation of the Relationship between Personality and Physical Performance Categories", (Ph. D. dissertation, Indiana University, 1969).

⁵Joe K. Ellenburg, "The Predictive Value of Selected Physical Variables in Determining Competitive Performance in High School Basketball," (Ed. D. Dissertation, University of Alabama, 1970).

of self-control, and were more venturesome than the losers.⁶ In a related study Rushall used the same personality scale, but he failed to find any significant personality differences between more and less successful members of the same team.⁷ He also failed to identify significant personality differences in the more or less successful athletes he polled in a study involving swimmers in Indiana.⁸

There is a need for personality and performance studies in dealing with the practical application of coaching theories and techniques while working with the individual athletes. The results of such studies assist the coach in understanding the importance of formulating operational procedures based on an athlete's personality traits to elicit optimum performance from the athlete in game situations and to help him in developing and maintaining positive mental health.

Definition of Terms

The following terms were used and identified in the study for the purposes of clarifying the data. The terms were defined to aid the reader in understanding the terms as they were used in the study.

Dominance. In the California Psychological Inventory dominance is used to identify strong, dominant, influential and ascendant individuals. It also identifies individuals who are able to take the

⁶Cratty, Psychology in Contemporary Sport: Guidelines for Coaches and Athletes, p. 98.

⁷Brent S. Rushall, "The Demonstration and Evaluation of a Research Model for the Investigation of the Relationship between Personality and Physical Performance Categories," (Ph. D. Dissertation, Indiana University, 1969).

⁸Brent S. Rushall, "An Investigation of the Relationships between Personality Variables and Performance Categories in Swimmers,"

initiative and exercise leadership.

Capacity for Status. The capacity for status scale in the California Psychological Inventory attempts to appraise those qualities of ambition and self-assurance. It also appraises those qualities that underlie, and lead to, status rather than measuring actual or achieved status.

Sociability. In the California Psychological Inventory the sociability scale was devised to differentiate individuals with an outgoing, sociable, participative temperament. The sociability scale also differentiated those individuals who shun involvement and avoid social visibility.

Social Presence. In the California Psychological Inventory the social presence scale was constructed to assess poise, self-confidence, and verve. The social presence scale also assesses spontaneity in social interactions.

Self-Acceptance. In the California Psychological Inventory the self-acceptance scale assesses factors such as sense of personal worth, self-acceptance, and capacity for independent thinking and action. It also emphasizes that individuals who would manifest a comfortable and imperturbable sense of personal worth, and who would be seen as secure and sure of themselves whether active or inactive in social behavior.

Sense of Well-Being. In the California Psychological Inventory the sense of well-being scale was derived to discriminate individuals feigning neurosis from normals and psychiatric patients responding truthfully. It also indicates interpersonal effectiveness derived in part from feelings of physical psychological well-being.

(Ph. D. Dissertation, Indiana University, 1967) cited by Cratty, Psychology in Contemporary Sports: Guidelines for Coaches and Athletes, p. 98.

Responsibility. The responsibility scale was developed as part of a study on political behavior. The responsibility scale identifies people who are conscientious, responsible, dependable, articulate about rules and order, and who believe that life should be governed by reason.

Socialization. In the California Psychological Inventory the socialization scale reflects the degree of social maturity, integrity, and rectitude the individual has attained. The socialization scale also orders individuals along a continuum from asocial to social behavior and forecasts the likelihood that they will transgress the mores established by their particular cultures.

Self-Control. In the California Psychological Inventory the self-control scale assesses the adequacy of self-regulation and self-control. The self-control scale also assesses the degree of freedom from impulsiveness and self-centeredness.

Tolerance. In the California Psychological Inventory the tolerance is a scale by which anti-semitic attitudes can be measured. The purpose of this scale was the identification of permissive, accepting, and non-judgmental social beliefs and attitudes.

Good Impression. In the California Psychological Inventory the purpose of this scale was to identify dissimulated records for which the normative data did not apply. The scale is also used to identify people who are able to create favorable impressions and who are concerned about how others react to them.

Communality. The communality scale is a validity scale. It was designed to detect protocols on which the respondent had answered in a random fashion.

Achievement via Conformance. The basic theme of this scale is one of a strong need for achievement coupled with a deeply internalized appreciation of structure and organization. This scale also assesses the motivational and personality factors associated with academic achievements in a high school setting.

Achievement via Independence. The achievement via independence scale is devised to predict achievement in college undergraduate courses. This scale is particularly interested in undergraduate courses in psychology.

Intellectual Efficiency. In the California Psychological Inventory the intellectual efficiency scale is constructed to provide a set of personality items that would correlate significantly with accepted measures of intelligence. This scale was originally referred to as a "non-intellectual intelligence test."

Psychological Mindedness. In the California Psychological Inventory the purpose of the psychological mindedness scale is to identify individuals who are psychologically oriented and insightful concerning others. The scale also indicates degrees to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others.

Flexibility. This scale is designed to identify people who are flexible, adaptable and even somewhat changeable in their thinking, behavior, and temperament. A large proportion of the item content consists of a rejection of the sorts of simple dogmatic assertions that characterize the authoritarian personality.

Femininity. In the California Psychological Inventory the femininity scale is not merely to distinguish between men and women but to define a psychological continuum which may probably be conceptualized

as masculine versus feminine. The purpose of the scale is toward defining a continuum of psychological femininity.

Statement of the Problem

The problem of this study was to determine whether or not a significant relationship existed between personality characteristics as determined by the California Psychological Inventory and the various performance results of high school male varsity basketball players in the Southwest Preparatory Conference. The performance areas investigated were field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages. The subproblem of this study was to set up possible prediction equations for predicting performance results from the personality characteristics as measures by the California Psychological Inventory.

Delimitations of the Study

The study was delimited by the following restrictions:

1. The study was restricted to those male high school varsity basketball players who participated as members of Southwest Preparatory Conference teams for the 1977-78 Season;
2. The study was restricted to the top five male varsity basketball players from 9 of the 12 participating schools;
3. The study was restricted to the basketball performance areas of field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages obtained in the conference tournament hosted by the Southwest Preparatory Conference;
4. The study was restricted to the personality scores obtained by the basketball players on the California Psychological Inventory.

The study was limited by the following conditions:

1. The study was limited in that there was no control over the previous type of basketball skill instructions of the participants in the study;

2. The study was limited by the fact that no control existed over the physical condition, emotional stability, and mental preparation of each subject during his participation in the conference tournament.

Basic Assumptions

The following basic assumptions applied to this investigation:

1. Construct and content validity was assumed for the instrument used to measure personality;

2. The male high school varsity basketball players on the participating teams of the selected schools were representative of the high school basketball population of that school;

3. The scores obtained from the measuring instrument of personality and the performance area scores were reliable estimates of the student's abilities and attitudes.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of the selected related literature for this study was divided into three parts: literature concerning the study of the relationship of personality characteristics and general athletic ability; literature concerning the relationship of personality traits and athletic performance; and the literature concerning the prediction of athletic performance based on personality trait and selected physical variables. A survey of the related literature indicated that there had been a large number of studies done on personality and general athletic ability. Also, a relatively large number of studies had been done in the area of the relationship of personality traits to athletic performance. However, a search of the related literature showed a dearth of studies using personality traits or characteristics to predict specific athletic performances by high school or college athletes. A continued evaluation of the related literature showed only three studies which had attempted to show the possibility of directly predicting an athlete's performance based upon measured personality traits or measured physical skills. Only one study attempted to investigate the prediction of performance from personality characteristics.

Biddulph undertook a study to determine if more proficient athletic skills are associated with better social or personal adjustment in high school boys. Four hundred sixteen sophomore and

junior boys enrolled in the physical education classes at two high schools in Salt Lake City, Utah were initially selected as the subjects. All of the subjects were given the following athletic tests as a measure of athletic achievement: full arm pull-ups on a horizontal bar; eight-pound shot put; standing broad jump; 100 yard dash; basketball throw for goal (2 minute time limit); and potato race. The California Classification Plan was then used for classifying the subjects for achievement in the selected athletic events.

All scores for the subjects were recorded and the fifty students having the highest scores were given a superior athletic achievement ranking, and the fifty students having the lowest scores were given an inferior athletic achievement ranking. The high and low athletic achievement groups were then administered the California Test of Personality as a measure of personality, and the Henmon-Nelson Intelligence Test was administered as a measure of scholastic aptitude. All earned high school grades were used as a measure of scholastic achievement. Four different teachers rated each student on social adjustment, scholastic achievement, attitude toward school, general appearance, grooming, and positive and negative personality traits. A sociogram was administered to all of the original subjects.

The data were statistically treated by determining the means and standard deviations for the eight indices of adjustment (self-adjustment scores, social adjustment scores, total adjustment scores, intelligence quotient scores, grade point averages, teachers' ratings, number of friends each chose, number of times chosen by others) for both the high and low athletic achievement groups. The means were statistically compared using critical ratio techniques to test the

significance of differences between the groups.

Biddulph found the superior athletic achievement group showed a statistically significant higher self-adjustment mean score. The superior athletic achievement group members were rated significantly higher on adjustment in the teachers' ratings. The difference in ratings between the two groups was statistically significant at the .01 level. Greater popularity mean scores for members of the superior athletic achievement group were found to be statistically significant at the .01 level.

Biddulph concluded on the basis of his findings that athletic achievement is a much more important factor in personal and social adjustment than had previously been thought. He also concluded that it was important to identify boys with low athletic achievement and to investigate their adjustment problems.⁹

Slusher investigated the personality and intelligence characteristics of selected high school athletes and nonathletes. The selected high school athletes were junior and senior lettermen in baseball, basketball, football, swimming and wrestling from nine different high schools in Maryland. The four hundred athletes were selected in a random stratified selection list, according to sport participation, from the same population as the nonathletes. Slusher selected a random sample of one hundred nonathletes from the same population. The subjects were selected to draw comparisons from athletes and nonathletes on selected profile scales.

⁹L. G. Biddulph, "Athletic Ability and the Personal and Social Adjustment of High School Boys," Research Quarterly 25 (March, 1954): 1-7

All subjects were administered the Minnesota Multiphasic Personality Inventory in order to develop a personality profile on each subject. The intelligence measures for each subject were taken from the results of the Lorge-Thorndike Intelligence Test which had been previously administered by school personnel during the school year.

The data were statistically treated using the t test for significance of differences between the group means. The .05 level of significance was established as the appropriate level for accepting or rejecting the stated null hypotheses for each group.

Slusher found a significant difference between the group means of baseball players and nonathletes on the variables of hypochondriasis, depression, femininity, and intelligence. The baseball players' group means were significantly lower on femininity and intelligence than the group means of the nonathletes. The basketball players' group means were significantly higher on hypochondriasis and depression and were significantly lower on psychopathic deviation, femininity, paranoia, and intelligence than were the group means of the nonathletes. The swimmers' group means were significantly lower on psychopathic deviation, femininity, and intelligences than the group means of the nonathletes. The wrestlers' group means were significantly higher on hypochondriasis and psychasthenia and were significantly lower than the nonathletes' group means on femininity and intelligence.¹⁰

Davidson attempted to determine if high school students who

¹⁰Howard S. Slusher, "Personality and Intelligence Characteristics of Selected High School Athletes and Nonathletes," Research Quarterly 35 (December, 1964); 539-545.

participate in interscholastic activities actually possess personality traits and value systems that are significantly different from those students who are nonparticipants in interscholastic athletics.

Davidson compared the personality traits and value systems of 215 nonathletes and 169 athletes who were enrolled in eight public high schools of Lee County, Virginia. The subjects were subdivided into female athletes, female nonathletes, male athletes, male nonathletes, freshman athletes, freshman nonathletes, upperclass athletes, and upperclass nonathletes.

Each subject was administered the California Test of Personality as a measure of personal adjustment, social adjustment, and total adjustment. The Pictorial Study of Values was used as a means of establishing value classifications.

The test of critical ratio was used to determine if a statistically significant difference existed between or among any of the groups on the personality variables and the value classifications. The .05 level of significance was selected as the indicator of a significant difference between the group means.

Davidson found that upperclass athletes achieved significantly greater scores than the upperclass nonathletes on seven categories of the tests selected for use in the study. On the basis of the findings, Davidson concluded that high school students who participate in interscholastic athletics do possess personality traits and value systems which are significantly different from those students who are nonparticipants in interscholastic athletics.¹¹

¹¹Richard A. Davidson, "A Study of Personality Traits and Value Systems of High School Athletes and Nonathletes," (Ed. D. dissertation, University of Kentucky, 1967).

Keogh investigated the relationship of motor ability and athletic participation in certain standardized personality measures. Keogh used one hundred sixty-seven junior and senior male students at Pomona College as the subjects for the study. Each subject was classified as a nonathlete, an intramural athlete, or a varsity athlete in an attempt to differentiate more adequately between the terms motor ability and athletic participation in their relationship to some measurable aspects of personality.

Each subject was administered four tests (baseball throw, pull-ups, bar snap, and jump and reach) of the Larson Test of Motor Ability to provide a single battery score. The California Psychological Inventory (CPI) was administered to each subject to provide a measure of personality, and the results from each of the 18 standard scales on the CPI were tabulated for each group.

The relationship of motor ability and athletic participation were analyzed separately using the analyses of variance of the results of each of the 18 scales of the CPI. The low, middle, and high motor ability groups were examined in one series of analyses and then the subjects were classified as nonathletes, intramural athletes, and varsity athletes for a second series of variance analyses.

Only two of the 36 F values computed were significant at the .05 level of significance. Therefore, Keogh concluded that the analysis did not demonstrate any relationship between levels of either motor ability or athletic participation and the separate scales of the CPI.¹²

¹²Jack Keogh, "Relationship of Motor Ability and Athletic Participation in Certain Standardized Personality Measures," Research Quarterly 30 (December, 1959): 438-445.

Wilson investigated the relationship between motor achievement and selected personality factors of junior and senior high school boys. One hundred fifty-four junior and senior high school boys were selected as subjects for the study. The hypothesis established for the study was that high motor achievers possessed different personality traits from the low motor achievers.

All subjects were administered the Cattell Sixteen Personality Factor Questionnaire and the Guilford Zimmerman Temperament Survey to measure personality factors. Measures of motor achievement were determined using the McCloy General Motor Ability Test, and the McCloy General Motor Capacity Test. The McCloy General Motor Achievement Quotient was also administered as a measure of motor achievement.

The data were statistically treated using the Pearson product-moment correlation technique, the t test, and the multiple regression technique. The .05 level of significance was chosen as the criterion for accepting or rejecting the hypothesis.

A statistically significant correlation at the .05 level was found on one of the personality factors with motor achievement. Fifteen of the sixteen personality factors correlated with motor achievement were not significant at the .05 level.

Wilson concluded there was a relationship between levels of motor achievement and some general group personality characteristics. There was little relationship between individual personality adjustment factors and motor achievement.¹³

¹³ Phillip K. Wilson, "Relationship between Motor Achievement and Selected Personality Factors of Junior and Senior High School Boys," Research Quarterly 40 (December, 1969): 841-844.

In a previous investigation Merriman had designed a study to assess the relationship of personality traits to motor ability. The subjects selected for the study were eight hundred eight high school male students in grades nine through twelve.

The subjects were administered the Phillips JCR Test as a measure of their motor ability. At the conclusion of the motor ability test, the subjects were divided into high and low motor ability groups and into athletes and nonathletes based upon their participation or nonparticipation in formalized competitive school athletics. The California Psychological Inventory was used to determine the subjects' personality traits.

The data were statistically treated using Pearson product-moment correlations and means tests. The .05 level of significance was chosen as the criterion for significance.

Merriman found a statistically significant correlation between motor ability and the following personality variables at all grade levels: dominance, capacity for status, sociability, social presence, self acceptance, sense of well-being, tolerance, achievement via independence, intellectual efficiency, psychological-mindedness, and femininity. Those students in the upper motor ability group scored significantly higher than the lower motor ability group in the areas of poise, ascendancy, and self-assurance.

The inferential conclusion to be drawn from Merriman's study was that motor ability rather than athletic participation is a more important factor in the development of a personality which included a strong self-concept. Merriman also concluded that motor ability was significantly related to the total personality of the

individual.¹⁴

Wright investigated the personality traits of athletes who participated in the high jump, javelin, long jump, pole vault, and shot put. Wright attempted to determine the relationship and compare the differences in the personality traits of selected subjects.

The subjects for the study were one hundred three athletes and eighteen coaches from nine colleges in the Rocky Mountain area. All of the selected subjects were participants in the five field events chosen for the study.

The subjects were administered the Cattell Sixteen Personality Factor Questionnaire as a measure of personality. The coaches participated in assessing the personality traits of their respective athletes according to the 16PF Test Profile.

The data were statistically treated using a one-way analysis of variance to test for significant differences among each of the sixteen personality items for the subjects. Patterned similarity coefficients of correlation were also used to test the general hypothesis. The .05 level of confidence was established as the level of significance for accepting or rejecting the null hypothesis.

Wright found that a significant relationship existed for the perception of personality traits of athletes in selected field events between the athletes themselves and their coaches. There was also a significant difference in the personality traits of the athletes in the five selected field event groups.

Wright concluded on the basis of his findings that the results of his study did not appear feasible as a diagnostic tool for directing

¹⁴Burton J. Merriman, "Relationship of Personality Traits to Motor Ability," Research Quarterly 31 (May, 1960):163-173.

a prospective athlete into a particular field event based upon the measured personality traits.¹⁵

Booth studied the personality traits of athletes as measured by the Minnesota Multiphasic Personality Inventory (MMPI). A secondary purpose of Booth's study was to select from the MMPI those test items that would discriminate between good and poor competitors in individual sports and team sports.

Booth selected two hundred eight-six male students at Grinnell College as subjects for the study. Sixty-three subjects were classified as freshman athletes. Seventy-eight subjects were classified as varsity athletes. Seventy-one subjects were classified as freshman nonathletes, and seventy-four subjects were classified as upper-class nonathletes. The athletes were then subdivided into three groups: those who participated only in team sports; those who participated only in individual sports; and those who participated in both team and individual sports. The athletes were rated as good or poor competitors by squad members and the coaches on two traits: competitive spirit and competitive performance. All subjects were administered the MMPI as a measure of personality.

Raw scores for the Minnesota Multiphasic Personality Inventory variables were used in the analysis of the data. An analysis of freshman athletes, freshman nonathletes, varsity athletes, and upper-class nonathletes; between groups of freshman and varsity athletes

¹⁵Paul T. Wright, *Personality Traits of Athletes in Selected Field Events*, (Ph. D. dissertation, University of Utah, 1973).

who were good and poor competitors.

Booth found that the nonathletes scored significantly higher than the athletes on the interest variable. The varsity athletes scored significantly lower on the anxiety variable than did the freshman athletes, freshman nonathletes, and the upper-class nonathletes. The varsity athletes and the upper-class nonathletes scored significantly higher on the dominance variable than did the freshman athletes and nonathletes. The upper-class nonathletes scored significantly higher on the social responsibility variable than did the varsity athletes, freshman athletes, and freshman nonathletes. Twenty-two items on the MMPI were found to show a significant discrimination between good and poor competitors.

Booth concluded that differences in personality as measured by the Minnesota Multiphasic Personality Inventory do exist between athletes and nonathletes and between athletes engaging in individual sports, team sports, and individual and team sports.¹⁶ Certain items in the Minnesota Multiphasic Personality Inventory act as discriminators of athletes rated as good or poor competitors.

Psychological differences between athletes and nonparticipants in athletics at the junior high school level, senior high school level, and the college level were studied by Schendel. Schendel also attempted to identify the psychological characteristics of the athletes and nonparticipants in athletics at each of the educational levels.

The subjects selected for the study were three hundred thirty-four team sport athletes and nonathletes enrolled in the ninth

¹⁶E.G. Booth, Jr., "Personality Traits of Athletes as Measured by the MMPI," Research Quarterly 29 (May, 1958): 127-138.

and twelfth grades in Eugene and Springfield, Oregon. The college subjects were enrolled at the University of Oregon. The subjects were randomly selected from a list of nonathletes and a list of athletes who participated in some type of team sport.

All subjects were given the California Psychological Inventory as a measure of psychological traits. The 18 scales of the California Psychological Inventory were divided into four major categories: Measures of poise, ascendancy, and self-assurance; measures of socialization, maturity, and responsibility; measures of achievement potential and intellectual efficiency; and measures of intellectual and interest modes.

The analysis of the data was made by finding the differences between the means of the standard scores of the 18 scales of the California Psychological Inventory for the groups at each educational level and testing for significance using the t test of differences between uncorrelated means. The .05 level of significance was selected as the measure of statistical significance.

There was a significant difference at the .01 level of significance in the ninth grade between the group means of the athletes and nonparticipants in athletics on the dominance variable, sociability variable, self-acceptance variable, socialization variable, and the communality variable. The athletes' group had the higher mean on each significant variable. There was a significant difference at the .01 level of significance in the twelfth grade between the group means of athletes and nonathletes on the sociability variable, self-acceptance variable, communality variable, and achievement via conformance variable. On each significant variable the group mean of the athletes was higher

than the group mean of the nonathletes. There was a significant difference at the .01 level of significance at the college level between the group means of athletes and nonathletes on the capacity for status variable, responsibility variable, tolerance variable, achievement via independence variable, intellectual efficiency variable, psychological mindedness variable, flexibility variable, and femininity variable. The group means of the nonathletes were significantly lower than the group means of the athletes on each of the listed variables.

On the basis of his findings, Schendel concluded that ninth and twelfth grade athletes generally possess desirable personal-social psychological characteristics to a greater extent than nonathletes in the same grades.¹⁷ College seniors who are nonathletes generally possess desirable personal-social psychological characteristics to a greater extent than college athletes in the junior or senior years.

Feigl undertook a study to determine if there was a significant relationship between personality factors and individuals selecting gymnastics and participating in particular events in gymnastics. Feigl also sought to find out if personality factors were related to performance levels of gymnasts and gymnastic teams.

The subjects selected for the study were one hundred seventy-five male gymnasts from twelve of the thirteen teams of the Southern Intercollegiate Gymnastic League and from seven other gymnastic teams of selected colleges in the Southeast. All subjects were administered

¹⁷Jack Schendel, "Psychological Differences between Athletes and Nonparticipants in Athletics at Three Educational Levels," Research Quarterly 36 (March, 1965): 52-67.

the Cattell Sixteen Personality Factor Questionnaire to assess personality. The performance statistics of each gymnast were used to measure the levels of performance of individuals and teams.

A t test was used as the statistical treatment to determine if gymnasts differed significantly in personality from the normative population. Multiple discriminate analysis, stepwise multiple discriminate analysis, and canonical correlations were used to determine if personality factors differed significantly among gymnasts competing in different gymnastic events, among performance levels of gymnasts, and between performance levels of gymnastic teams. The Cattell's Coefficients of Patterned Similiarity was used to determine if gymnasts on a successful team had similar personality patterns.

Feigl found that five factors of personality were statistically significant in differentiating gymnasts from the normative population. Statistically significant differences in personality were found among gymnasts who participated in different events. The results of the study were not significant in establishing a relationship of personality characteristics to performance levels of gymnasts, membership on a successful team, and performance levels of gymnastic teams.

Feigl made several conclusions based upon the results of his investigation.¹⁸ It is doubtful that a distinct gymnastic personality exists. Levels of performance of gymnasts cannot be determined by personality traits.

Simpson sought to determine the personality characteristics of women gymnasts and to relate those factors to the variables of

¹⁸Frank L. Feigl, "The Relationship of Personality to the Sport of Gymnastics," (Ph. D. dissertation, Indiana University, 1974).

success, level of performance, and years of experience in gymnastics. A secondary purpose of the study was to pool all the personality characteristics and determine, if possible, a "gymnastic type" personality profile.

The subjects selected for the study were the women gymnasts participating at the Midwest Collegiate Gymnastic Championship for Women. The subjects were administered the Cattell Sixteen Personality Factor Questionnaire as a measure of personality. The selected variables of performance that were evaluated were: level of performance classification determined by Midwest Championship meet format; and years of gymnastic experience.

The data were statistically analyzed using the Chi square technique. Chi square was applied to the data to test for a significance of differences that might be present in the multicomparisons. The .05 level of significance was established for the study.

Simpson found that the total group of women gymnasts differed significantly on eleven of the 16 Cattell personality factors. The intermediate gymnasts were significantly differentiated on seven of the 16 Cattell personality factors, and the advanced gymnasts were differentiated significantly on six of the sixteen personality factors of Cattell's questionnaire.

Simpson suggested several practical uses for the findings of his study.¹⁹ A coach using personality profiles of gymnasts should be able to work more effectively with a gymnast and be less surprised

¹⁹Charles Simpson, "Personality Traits and Performance in Women's Gymnastics," (Ph. D. Dissertation, Indiana University, 1974).

at her behavior during stressful practice and competitive situations. The identification of team members whose emotional adjustment may need attention is possible using personality profiles.

Leithwood investigated the personality characteristics of three groups of weight trainers. A secondary purpose of the study was to determine if the personality traits of the weight trainers differed sufficiently from each other due to the reason for weight training and the performance level of the weight trainers.

There were forty-five subjects involved in the study. The subjects were divided into three groups of fifteen members. Fifteen subjects engaged in supplementary weight training for competitive sport. Fifteen subjects engaged in weight training to develop their physique, and fifteen subjects engaged in weight training to improve competitive lifting performance.

All subjects were given the Cattell Sixteen Personality Factor Questionnaire as a measure of personality. Performance measures were taken from the competitive weight lifters' meet performances.

The data were statistically analyzed using the analysis of variance (ANOVA) technique. A comparison of the three groups was made using a one-way analysis of variance to test for significant differences between and among the group means. The .05 level of significance was established for accepting or rejecting the hypothesis.

Leithwood found that weight trainers as a group differed significantly from the normative population in the following characteristics: intelligence (more), superego strength (less), shy, withdrawn (more), forthright, artless (more), self-sufficient, resourceful (more). Leithwood did not find a statistically significant relationship between

a weight trainer's performance and his personality traits.²⁰

Stevens analyzed baseball players on six college and university teams. The study was designed in an attempt to help determine if personality factors of college baseball teams differ significantly from each other. Stevens also sought to determine if there was any significant relationship between personality factors or characteristics and performance in college baseball as they pertain to individuals and/or teams. An attempt was also made to determine if there were personality factors which tended to differentiate college baseball players with different positions.

The subjects in the study were administered three personality assessment instruments as a measure of personality: Rotter's I-E Scale; Allport, Vernon, Lindzey's Study of Values; and Cattell Sixteen Personality Factor Questionnaire. The subjects were then categorized by teams, by positions, and on more successful and less successful players and teams.

A statistical analysis was made using a series of comparisons by profile analyses of the various groups. The profile analyses were statistically treated using Cattell's Co-efficients of Pattern similarity, r_p , technique. The level of significance was set at the .05 level.

Stevens found that there were statistically significant personality differences between college baseball teams. There were

²⁰Kenneth A. Leithwood, "Personality Characteristics of Three Groups of Weight Trainers," (M.P.E. thesis, University of British Columbia, 1967) cited by Raymond A. Weiss and Robert N. Singer (eds), Completed Research in Health, Physical Education, and Recreation 18 vols. (Washington, D. C.: American Association for Health, Physical Education, and Recreation--National Education Association) (1968), 10:14.

no significant differences in the personality characteristics among pitchers, catchers, infielders, or outfielders although certain personality tendencies seemed to be indicated. Stevens also found that there were statistically significant personality differences between more successful college baseball teams and less successful college baseball teams; however, there were no significant differences in more successful college baseball players and less successful college baseball players although certain personality tendencies were indicated.²¹

Stebbins investigated the possibility of performance levels in specific sports being a function of personality and social situation. Two hundred thirty-nine high school boys were chosen as subjects for the study. The subjects were from both parochial and public senior high schools. The subjects were divided into four groups: outstanding athletes, varsity athletes, drop-out athletes, and nonathletes. The athletes were boys who participated in track, football, or track and football.

The subjects were administered the Cattell Sixteen Personality Factor Questionnaire as a measure of personality. The data on age, height, weight, and sociological items were obtained through the use of a questionnaire designed by the researcher. The intelligence quotients were taken from the appropriate school records.

The data were statistically treated using a multiple discriminate analysis to determine if significant relationships existed between or among the various factors. Comparisons between and among

²¹Thomas B. Stevens, "A Personality Analysis of College Baseball Players," (Ed. D. Dissertation, University of Alabama, 1973).

the group means were made on each personality item using a multivariate technique. The .05 level of significance was established as the level of confidence for accepting or rejecting the null hypotheses.

Outstanding and varsity athletes were found to be significantly more sociable than drop-out athletes and nonathletes. A significant difference was found between the group means of outstanding athletes and varsity athletes and the group means of drop-out athletes and nonathletes on dominance. There was no significant relationship found between personality traits and levels of performance in track or football.²²

Smith undertook a study to analyze the relationship between personality traits and levels of success in swimming and diving. A secondary problem being investigated in the study was the relationship of personality to total team performance.

Smith selected ninety-nine varsity swimmers and divers competing in the 1969 Wisconsin State University Conference Swimming and Diving Meet. The subjects who were engaged in the eighteen swimming and diving events were categorized into a successful group (participants ranking in the upper half of the event) and an unsuccessful group (participants ranking in the lower half of the event). The teams participating in the meet were also categorized into more successful teams and less successful teams depending upon the team's final standing in the meet.

²²Clay Stebbins, "Achievement in Sport as a Function of Personality and Social Situation," (M.S. thesis, University of Wisconsin, 1969) cited by Raymond A. Weiss and Robert N. Singer (eds.), Completed Research in Health, Physical Education, and Recreation 18 (Washington, D. C.: American Association for Health, Physical Education, and Recreation--National Education Association, (1971), 12:234.

All subjects were administered the Cattell Sixteen Personality Factor Questionnaire as a measure of personality. The performance measures were the scores achieved by the individuals and teams on the eighteen swimming and diving events.

The data were statistically analyzed using the one-way analysis of variance technique. An analysis of variance was used to determine if a significant difference existed between and among groups for each event as compared with each item on the Cattell inventory. The .05 level of confidence was established for the study.

Smith found only seventeen of the three hundred four possible relationships significant at the .05 level. There did not appear to be a significant relationship between the total personality scores of individuals and their level of performance.²³

Maglischo investigated the influence of personality on achievement among a group of competitive swimmers.²⁴ The subjects for the study were one hundred twenty-five children between the ages of eight and seventeen who were members of the Chico Aqua Jets age-group competitive swimming team. The subjects were divided into two groups: the 8-12 age group and the 13-17 age group.

²³Robert D. Smith, "An Analysis of the Relationship between Personality Traits and Success in Swimming and Diving," (M.S. thesis, Wisconsin State University - La Crosse) cited by Raymond A. Weiss and Robert N. Singer (eds.), Completed Research in Health, Physical Education, and Recreation 18 (Washington, D. C.: American Association for Health, Physical Education, and Recreation--National Education Association, (1970), 12:285.

²⁴Ernest W. Maglischo, "The Influence of Personality on Achievement in Age-Group Competitive Swimming," (Ph. D. dissertation, Ohio State University, 1974).

The subjects in the 8-12 age group were administered the Cattell Children's Personality Questionnaire (CPQ). The subjects in the 13-17 age group were administered the Cattell Jr.-Sr. High School Personality Questionnaire (HSPQ). Members of each age group were then classified into low, middle, or high achievement groups on the basis of their fastest time in their best swimming event.

Multivariate and univariate statistical procedures were utilized in the treatment of the data. The multivariate procedure used was a 3-way multiple discriminant analysis. The univariate procedure employed was a 3-way analysis of variance (ANOVA) method of the least squares. The .05 level of significance was chosen as the criterion for accepting or rejecting the stated null hypothesis.

Maglischo did not find any statistically significant differences in the personality characteristics and achievement in swimming among the 8-12 age group. No significant differences existed between total personality scores and achievement in swimming among the 13-17 age group. However, high achievers were significantly more dominant than the low or middle achievers. Low achievers were significantly less surgent than the high achievers, and the middle achievers. Also, low achievers were significantly more relaxed than high and middle achievers.

Coffman investigated the personality of basketball players as compared to the performance of the basketball players.²⁵ The subproblem investigated by Coffman was to formulate functional prediction equations (if significant relationships were found) for

²⁵Gary G. Coffman, "Personality as Compared to Performance of Basketball Players in the Southeastern Conference for the 1973-74 Season," (Ed. D. dissertation, University of Mississippi, 1974).

predicting specific performance results from measures of the California Psychological Inventory.

One hundred two varsity basketball players from nine of the ten Southeastern Conference teams were selected as subjects for the study. The subjects were later subdivided into two groups: guards and forwards.

All subjects were administered the California Psychological Inventory in order to provide scores for the eighteen personality characteristics which were used as predictor variables in the study. The performance areas were measured by keeping statistics on the following categories: field goal percentages; free throw percentages; rebounds; personal fouls; assists; scoring averages; and games won.

The data were statistically treated using the multiple regression correlation techniques and applied among the criterion variables and each of the eighteen predictor variables. An F-ratio of .05 was established as the acceptable level of significance for accepting or rejecting the null hypotheses. An F-ratio of .30 was selected for deletion in the multiple regression program, and the tolerance level was set at .001.

Coffman found that significant relationships occur between personality characteristics and performance categories in the full subject model. Coffman also found that there were no functional prediction equations in any of the performance areas for the full subject model, but there were two functional prediction equations for the restricted subject model for forwards in the two categories of field goal percentages and assists. Coffman found six functional prediction equations for the restricted subject model for guards

which were in the categories of: field goal percentages, rebounds, personal fouls, assists, scoring averages, and games won.

Ellenburg investigated the predictive value of selecting physical variables in determining competitive performance of high school boys in basketball.²⁶ There were three purposes associated with Ellenburg's study: to determine the value of a battery of skill tests and the personal factors of age, height, and weight in predicting the game performance of basketball players; to predict which of the tests and personal factors were most useful to high school coaches in predicting performance; and to develop a method for predicting the game performance of basketball players.

One hundred ten 4-A high school varsity basketball players from Alabama were selected as subjects for the study. The subjects were players on eleven teams from the cities of Tuscaloosa, Birmingham, and Selma.

The performance data on the subjects were obtained by the use of a rating chart kept on each player in each game during the 1969-70 regular season. The performance variables used in the study were: scoring average, field goal percentage; free throw percentage, rebounds, minutes played, and total performance score based on the rating chart.

The data were statistically treated utilizing a correlation matrix to determine intercorrelations between preseason variables and performance, and which preseason variables had the greatest

²⁶ Joe K. Ellenburg, "The Predictive Value of Selecting Physical Variables in Determining Competitive Performance in High School Basketball," (Ed. D. dissertation, University of Alabama, 1970).

correlation in predicting performance. Multiple regression procedures were used to identify the combination of preseason variables which best predicted performance scores. A multiple regression equation was constructed using the composite of preseason variables to predict performance if significance was established. The .05 level of significance was used as the level of confidence for the study.

Ellenburg found that a thirty-second-shooting test and vertical jump were the most reliable predictors of performance in competitive basketball games. The combination of height, hand grip, vertical jump, wall volley, and the thirty-second-shooting test was the most significant combination of variables in predicting basketball performance. A functional multiple regression equation using the variables height, hand grip, vertical jump, wall volley, and thirty-second-shooting test was formulated for predicting specific performance outcomes from individuals.

Ellenburg made several significant recommendations in his study. He suggested that a similar study be undertaken involving junior high school boys and college men as subjects. Ellenburg suggested the investigation of a similar study utilizing specific personality traits as predictors of basketball performance for high school boys.

Rushall set up a study for the demonstration and evaluation of a research model to show the relationship between personality and physical performance categories.²⁷ The basic purpose of the study was to evaluate the present procedures and research techniques used

²⁷ Brent S. Rushall, "The Demonstration and Evaluation of a Research Model for the Investigation of the Relationship Between Personality and physical Performance Categories," (Ph. D. dissertation, Indiana University, 1969).

in studying the relationship of personality to physical performance, and from this study produce an appropriate research model. The requirements for the model would be that a learning theory for the development of personality be considered, experimentation would test some aspect of the theoretical position through specific hypotheses, results would substantiate or modify the theory, and would be required to give purpose, direction and rational justification to the experiment and its assumptions.

Four general hypotheses were associated with the relationship between personality and physical performance: levels of performance are differentiated by personality variables; successful performance groups are differentiated from non-successful groups by personality information; champions have a particular personality; and participation in athletics changes personality. These hypotheses were investigated using competitive swimmers and football players as subjects.

The data were collected by administering the Cattell Sixteen Personality Factor Questionnaire as a measure of personality. Performance statistics were kept on the subjects as a measure of achievement.

The data were statistically treated using a variety of analytical techniques. The statistical strategies used in analyzing the data were a multivariate technique, stepwise multiple discriminate analysis, and canonical correlation.

Rushall found that personality variables were not related to performance classifications in swimming. Results showed that high school and college football players were differentiated in terms of their playing order by any characteristic set of personality traits.

Football and swimming success were not differentiated from a lack of success by personality factors. There was not any particular champion's personality evident either football or swimming. The results of the study showed a lack of relationship between personality and general physical performance classifications.

Rushall suggested one significant recommendation in his study. He suggested the standards and procedures of the model be adopted for research into the relationship between personality and physical performance classifications.

Summary

The review of related literature concerning the relationship between personality and general athletic ability has produced both studies which were in agreement in their findings and studies which had contrasting results. Merriman²⁸ and Wilson²⁹ presented conflicting results in related studies on motor ability and personality. Merriman reported a significant correlation between motor performance and personality on eleven of eighteen items. Merriman concluded that there was a significant relationship between motor ability and personality. Wilson reported only one of sixteen personality factors to be significantly related to motor ability. Wilson concluded that there was little relationship between personality and motor ability. Wilson's findings supported the results of an earlier study done by Keogh. Keogh³⁰ concluded on the basis of his study that there was no

²⁸Merriman, pp. 163-173.

²⁹Wilson, pp. 841-842.

³⁰Keogh, pp. 438-445.

significant relationship between levels of motor ability and the personalities of students. Davidson³¹ and Slusher³² investigated the relationship of personality between high school athletes and nonparticipants in high school athletics. The results of both studies concurred in the conclusion that high school athletes do possess personality traits which are significantly different from those of nonparticipants in high school athletics. The earlier findings of Biddulph³³ tended to support the findings of Davidson and Slusher. Biddulph studied the personal adjustment of high school boys divided into high athletic achievers and low athletic achievers. Biddulph concluded that there was a significant difference between the two groups on personal adjustment in favor of the high athletic achievers. Schendel's³⁴ study results agreed with the findings of Davidson, Slusher, and Biddulph on the high school level, but he found a significant difference between athletes and nonparticipants in athletics on personality traits in favor of the nonparticipants at the college level. The results of Booth's³⁵ study of personality traits of athletes and nonathletes at the college level was in general agreement with the findings of Schendel in that upperclass nonathletes scored significantly higher on the social responsibility variable than athletes. However, Booth found that athletes scored significantly lower than upperclass nonathletes on the anxiety variable and significantly higher on the dominance variable. Wright³⁶ investigated the personality differences among athletes at the college level. Wright concluded

³¹Davidson.

³³Biddulph, pp. 1-7.

³⁵Booth, pp. 127-138.

³²Slusher, pp. 539-545.

³⁴Schendel, pp. 52-67.

³⁶Wright.

that there were significant differences in the personality traits of athletes participating in different field events in track.

A review of related literature in regard to the relationship of personality and level of performance showed an almost unanimous consensus that there did not appear to be any significant relationship between the two variables. Maglischo³⁷ and Smith³⁸ presented results that were in agreement on related studies involving swimming and diving performances and personality traits. Maglischo did not find a significant relationship between personality characteristics and swimming performances for junior and senior high school students. Smith did not find a significant relationship between personality and swimming and diving performances for competitive college swimmers and divers. Stebbins³⁹ investigated the relationship of personality traits to the performance of high school boys in track and football but did not find any significant relationships. Leithwood⁴⁰ reported that no statistically significant relationships existed between a weight trainer's performance and his personality characteristics. Stevens⁴¹ analyzed baseball players at the college level in an attempt to determine if a significant relationship existed between a baseball player's level of performance and his personality. Stevens concluded that there was no significant relationship between an individual baseball player's performance and his personality traits. Feigl⁴²

³⁷Maglischo.

³⁸Smith cited by Weiss and Singer, p. 285.

³⁹Stebbins cited by Weiss and Singer, p. 234.

⁴⁰Leithwood cited by Weiss and Singer, p. 14.

⁴¹Stevens.

⁴²Feigl.

did not find a statistically significant relationship between the performance of male gymnasts and their personality traits. In contrast to the studies reporting no significant relationship between personality characteristics and athletic performance, Simpson⁴³ suggested that his study indicated a significant relationship did exist between personality factors and the level of performance in women's gymnastics.

The review of related literature has shown a lack of studies investigating the prediction of athletic performance based on personality factors. Coffman did not find functional prediction equations in any of the performance areas for the full subject model. However, Coffman found two functional prediction equations for the restricted subject model for forwards in the performance areas of field goal percentages and assists. Six functional prediction equations were found in the restricted subject model for guards in the performance areas of field goal percentages, rebounds, personal fouls, assists, scoring averages, and games won. Rushall⁴⁵ suggested a research model to be used in predicting performance in football and swimming from personality. However, Rushall did not formulate any functional prediction equations for performance in football and swimming from personality factors. Ellenburg⁴⁶ investigated the predictive value of selected physical variables in determining the competitive performance of high school boys in basketball. Ellenburg

⁴³Simpson.

⁴⁴Coffman

⁴⁵Rushall

⁴⁶Ellenburg.

found that a thirty-second-shooting test and vertical jump were the most reliable predictors of performance in basketball. Ellenburg also found that a functional prediction equation using a combination of the variable height, hand grip, vertical jump, wall volley, and a thirty-second-shooting test could be used to predict basketball performance for high school boys.

CHAPTER III

DESIGN AND PROCEDURES

The research problem of this study was to determine whether or not a significant relationship existed between personality characteristics as determined by the California Psychological Inventory, and the various performance results of high school male varsity basketball players in the Southwest Preparatory Conference. The purpose in undertaking the investigation was to determine if predictive equations could be formulated regarding basketball performance areas based on the predictor variables.

Presented in this section is an overview of research procedures, the variables used in the study, the subjects selected for the study, the selection of the test used in the study, and the collection of the data. The statistical treatment of the data concludes Chapter III.

Overview of Research Procedures

The subjects selected for the study were forty-five varsity basketball players from nine of the twelve schools participating in the Southwest Preparatory Conference during the 1977-78 season. Personality traits and selected competitive basketball performance areas were measured. At the conclusion of the collection of the data, multiple regression analysis, analysis of variance, were computed and summarized for all subjects. The .05 level of significance was chosen for rejection of the null hypothesis.

Variables

The variables selected for this study were chosen to determine if any statistically significant relationship existed between and among individual personality traits and each of the performance areas. The personality traits as determined by the California Psychological Inventory functioned as the predictor variables. The basketball performance areas in this study always functioned as the dependent variables.

Predictor Variables

The variables used as predictor variables were the eighteen personality traits of the California Psychological Inventory. The traits were dominance, capacity for status, sociability, social presence, self-acceptance, communality, achievement via conformance, achievement via independence, intellectual efficiency, psychological mindedness, flexibility, sense of well-being, responsibility, socialization, self-control, tolerance, good impression, and femininity.

Dependent Variables

The variables used as dependent variables were the basketball performance areas. The dependent variables were field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages.

Subjects

The subjects selected for the study were forty-five male high school basketball players competing on nine of the twelve basketball teams in the Southwest Preparatory Conference. The top five players

on the varsity teams of San Marcos Academy, Texas Military Institute, St. Stephens, St. Johns, Kinkaid, St. Marks, Collegiate, Holland Hall, and Ft. Worth Country Day comprised the full subject model for the study. The subjects for the study were selected on the basis of the following criteria: (1) the subjects must be male varsity basketball players competing for one of the nine selected schools during the 1977-78 basketball season; (2) the subjects, their parents, and their coaches must agree to voluntary participation in the study; and (3) the subject must not have any physical or mental handicap which would prevent him from participating in the study in a normal manner. All subjects were encouraged to complete the study once they had agreed to participate, but the subjects maintained the right to discontinue their participation if it was deemed necessary by them.

Tests Used In The Study

The data needed to measure personality characteristics and the basketball performance areas were obtained through the administration of a selected standardized personality test and a record of statistics kept in a scorebook and a shot selection chart. The criteria used as a basis for selecting the personality measuring instrument were validity, reliability, objectivity, practicality of administration, and suitability for the subjects involved in the study.

Selection and Description of Personality Tests

A general review of the personality measuring instruments available for use with high school male students was made. The personality measuring instruments which were examined included the

Cattell's Sixteen Personality Factor Questionnaire,⁴⁷ the Minnesota Multiphasic Personality Inventory,⁴⁸ the California Psychological Inventory,⁴⁹ and the California Test of Personality.⁵⁰ The California Psychological Inventory was selected on the basis of its established validity, reliability coefficients, suitability for the subjects of the study, and its practicality of administration. A summary of the coefficients of stability established in studies by Gough appears in Table 1 of this study. The reliability coefficients of the factors in the California Psychological Inventory was established for high school boys using the Kuder-Richardson formula which is a technique for testing internal consistency. A summary of the Kuder-Richardson formula 21 reliability coefficients appears in Table 2.

Harrison Gough published the first scales of the California Psychological Inventory in 1948. Over the next three years Gough and associates developed fifteen scales. The first copyrighted edition of California Psychological Inventory appeared in 1951. In 1957, the first test manual utilizing the eighteen scales appeared. It was reissued in 1960 and revised in 1964 and 1969.

⁴⁷Raymond B. Cattell and Glen F. Stice, Handbook for the Sixteen Personality Factor Questionnaire (Champaign, Illinois: Institute for Personality and Ability Testing, 1957).

⁴⁸Starke R. Hathaway and J. Charnley McKinley, Minnesota Multiphasic Personality Inventory, Revised Form. (New York: Psychological Corporation, 1951).

⁴⁹Harrison G. Gough, Manual for the California Psychological Inventory. Revised edition, (Palo Alto, California: Consulting Psychologists Press, 1969).

⁵⁰Louis P. Thorpe, Willis W. Clarke, and Ernest W. Tregs, California Test of Personality, Revised Form. (Los Angeles: California Test Bureau, 1953).

TABLE 1
 A SUMMARY OF THE COEFFICIENTS OF STABILITY
 FOR HIGH SCHOOL BOYS AND GIRLS

Scale	Subjects	
	101 High School Boys	125 High School Girls
Do	.64	.72
Cs	.62	.68
Sy	.68	.71
Sp	.60	.63
Sa	.67	.71
Wb	.71	.72
Re	.65	.73
So	.65	.69
Sc	.75	.68
To	.71	.61
Gi	.69	.68
Cm	.38	.44
Ac	.60	.73
Ai	.63	.57
Ie	.74	.77
Py	.48	.49
Fx	.60	.67
Fe	.59	.65

SOURCE: Harrison G. Gough. Manual For California Psychological Inventory, Revised edition, (Palo Alto, California: Consulting Psychologists Press, 1969), p. 19.

TABLE 2

A SUMMARY OF THE KUDER-RICHARDSON FORMULA 21 RELIABILITY
COEFFICIENTS FOR HIGH SCHOOL BOYS AND GIRLS

Scale	Subjects	
	3572 High School Boys	4056 High School Girls
Do	.70	.71
Cs	.61	.68
Sy	.74	.75
Sp	.74	.75
Sa	.51	.58
Wb	.76	.79
Re	.72	.70
So	.68	.67
Sc	.82	.85
To	.74	.75
Gi	.77	.77
Cm	.70	.52
Ac	.69	.94
Ai	.54	.56
Ie	.81	.74
Py	.22	.23
Fx	.56	.51
Fe	.62	.29

SOURCE: Edwin I. Megargee, The Californial Psychological Inventory Handbook (San Francisco: Jossey-Bass Inc., 1972), p.31.

The California Psychological Inventory is divided into four class measures. The six class I scales measure poise, ascendancy, self-assurance, and interpersonal adequacy. The class II scales measure socialization, maturity, responsibility, and intrapersonal structuring of values. The three class III scales relate to achievement potential and intellectual efficiency. The three class IV scales were described as measuring intellectual and interest modes.

Description of the Performance Areas

The performance areas of field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages were selected as measures of basketball performance. Field goal percentage for the individual was obtained by dividing the total number of shots attempted into the number of shots made. Free throw percentage was obtained by dividing the number of free throws attempted into the number of free throws made. Rebounds were the total number of offensive and defensive rebounds collected by the individual. Personal fouls were the total number of fouls charged to the individual by the referees. Assists were the passes by an individual to a teammate which directly resulted in a field goal. The scoring average was obtained by dividing the total number of games played into the total number of points scored by an individual.

Collection of the Data

The personality scale scores and the performance area statistics were the major sources of data collected for the study. Additional

sources of data drawn upon by the investigator included books, periodicals, bulletins, and unpublished research studies related to the present investigation. School staff members from the selected schools served as a source of data in supplying information concerning the subjects used in the study.

Measures of Personality Traits

The data collected for the measurement of personality were obtained through the administration of the California Psychological Inventory. The California Psychological Inventory was administered in a group setting at each of the nine participating schools by the counselors at the respective schools. The administration of the test required approximately one hour. The instructions were read to each group by their respective counselors. Each student read the questions and responded on the appropriate answer sheet. The counselor emphasized that there were no right or wrong answers, and the answer sheets would not be seen by anyone other than the investigator. All answer sheets for the California Psychological Inventory were hand scored by the investigator in accordance with the directions outlined in the test manual for the California Psychological Inventory.

Measures of Performance Areas

The data collected for the individual basketball performance areas were obtained through the examination and calculation of the following performance items: (1) field goal percentages; (2) free throw percentages; (3) rebounds; (4) personal fouls; (5) assists; and (6) scoring averages. Each team's game statistics were recorded and tabulated by an official scorekeeper provided by the host school at

the Winter Sports Tournament. The official scorebook contained the individual players vital statistics on free throw percentage, scoring average and personal fouls. Each team's game statistics were also recorded on shot selection charts kept by the team's assistant coach. The shot selection chart contained each individual player's vital statistics on rebounds, assists, and field goal percentages. The investigator examined the official scorebooks and shot selection charts after each game and recorded the individual player's vital statistics on field goal percentage, free throw percentage, rebounds, personal fouls, assists, and scoring average. At the conclusion of the tournament the investigator collected all of the accumulated statistics for each individual as a total performance score in each of the performance areas. Total scores of each of the performance areas were combined to form a single score which was designated as basketball achievement.

Treatment Of The Data

Upon completion of the collection of the data, multiple regression correlational techniques were applied among the predictor variables and the dependent variables. The specific relationships tested were full subject model variables, total personality score versus each performance area, dominance versus each performance area, capacity for status versus each performance area, sociability versus each performance area, social presence versus each performance area, self-acceptance versus each performance area, communality versus each performance area, achievement via conformance versus each performance area, achievement via independence versus each performance area,

intellectual efficiency versus each performance area, psychological mindedness versus each performance area, flexibility versus each performance area, sense of well-being versus each performance area, responsibility versus each performance area, socialization versus each performance area, self-control versus each performance area, tolerance versus each performance area, good impression versus each performance area, femininity versus each performance area. The SPSS "Stepwise Multiple Regression"⁵¹ was used to analyze the relationship between the predictor variables and the dependent variables for the purpose of answering the questions included in the study. The F-ratio level for inclusion of a variable in the multiple step-wise regression program was .01. The F-ratio for deletion was .005 and the tolerance level was .001. The .05 level of significance was selected as the required level to reject the null hypothesis.

⁵¹ Norman H. Nie, C. Hadlai Hull, Jean G. Jenkins, Karin Steinbrenner, Dale H. Bent, SPSS, Statistical Package for the Social Science (New York: McGraw-Hill, 1975).

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The analysis of the results of the investigation are presented and discussed in terms of the results of the step-wise regression analysis. The two major sub-divisions are: (1) zero-order correlations among the variables; and (2) the multiple correlation coefficients between combinations of personality variables and each dependent variable along with the regression equation for predicting each dependent variable.

Predictor Variables

The predictor variables which were used in this study, along with their alphameric symbols, and the class to which they belong, are presented in Table 4. All references to each predictor variable made in the step-wise regression program (SPSS) summaries are made on the basis of corresponding initials. All summary tables dealing with multiple correlations refer to all predictor variables by the appropriate initials. Table 4 serves as a basis for understanding the regression equations.

Criterion Variables

The six criterion variables used received an alphameric symbol to be used in the prediction equations. The field goal percentage

TABLE 4
ALPHAMERIC SYMBOLS FOR PERSONALITY VARIABLES

Class	Alphameric Symbols	Variable
I	Do	Dominance
	Cs	Capacity for Status
	Sy	Sociability
	Sp	Social Presence
	Sa	Self-Acceptance
	Wb	Sense of Well-Being
II	Re	Responsibility
	So	Socialization
	Sc	Self-Control
	Tl	Tolerance
	Gm	Good Impression
	Cm	Communality
III	Ac	Achievement via Conformance
	Ai	Achievement via Independence
	Ie	Intellectual Efficiency
IV	Py	Psychological Mindedness
	Fx	Flexibility
	Fe	Femininity

TABLE 3
 MEANS AND STANDARD DEVIATIONS OF PERSONALITY
 AND PERFORMANCE TRAITS

Variable	Mean	Standard Deviation	Cases
FG	42.2889	16.9714	45
FT	52.3333	26.9562	45
REB	10.2667	7.2595	45
PF	6.0444	2.5041	45
ASS	2.0222	2.0614	45
SCAV	7.7333	4.3973	45
DO	25.0667	5.7541	45
CS	17.0222	3.9109	45
SY	22.8889	4.7636	45
SP	34.8222	5.6701	45
SA	21.9111	3.6170	45
WB	31.0444	5.5798	45
RE	24.0889	4.5218	45
SO	34.5556	6.6180	45
SC	22.5111	6.9007	45
TL	17.3111	3.8543	45
GM	13.7556	4.7057	45
CM	23.5111	4.1975	45
AC	22.7333	4.6729	45
AI	16.5556	4.0651	45
IE	33.4667	5.2336	45
PY	10.1556	2.5669	45
FX	8.8222	3.6387	45
FE	15.8667	3.6841	45
Class I	152.7556	21.4404	45
Class II	135.7333	20.2982	45
Class III	72.7556	11.7863	45
Class IV	34.8444	6.2775	45

variable received an alphameric symbol of FG. The free throw percentage variable received an alphameric symbol of FT. The rebounds variable received an alphameric symbol of Reb. The personal fouls variable received an alphameric symbol of PF. The assist variable received an alphameric symbol of Ass. The scoring average variable received an alphameric symbol of Scav. Basketball achievement received the alphameric symbol of BA.

Zero-Order Correlations

The coefficients of correlations among the independent variables and the criterion variables are presented and discussed. With forty three degrees of freedom, the r required for significance at the .05 level was .304 and at the .01 level, .393.

Field Goal Percentages

Presented in Table 5 are correlation coefficients between items on the California Psychological Inventory and field goal percentages.

A significant positive relationship existed at the .05 level between field goal percentage and responsibility having an achieved correlation coefficient of $r = .340$. No other significant relationships existed between field goal percentage and the remaining personality characteristics.

Free Throw Percentages

Correlation coefficients between free throw percentages and the independent variables are presented in Table 6.

TABLE 5

CORRELATION COEFFICIENTS BETWEEN FIELD GOAL
PERCENTAGES AND EIGHTEEN PERSONALITY TRAITS

Item	Correlation with Criterion
Do	.140
Cs	.078
Sy	.052
Sp	-.009
Sa	.120
Wb	.299
Re	.340
So	.291
Sc	.060
Tl	.170
Gm	-.067
Cm	.207
Ac	.107
Ai	.142
Ie	.301
Py	.009
Fx	.002
Fe	.004

TABLE 6
CORRELATION COEFFICIENTS BETWEEN FREE THROWS
PERCENTAGES AND EIGHTEEN PERSONALITY TRAITS

Item	Correlation with Criterion
Do	.287
Cs	.312
Sy	.269
Sp	.122
Sa	.077
Wb	-.130
Re	.094
So	-.110
Sc	-.024
Tl	-.039
Gm	.123
Cm	-.202
Ac	-.002
Ai	.070
Ie	.108
Py	.053
Fx	.015
Fe	.012

A positive significant relationship existed between free throw percentages and capacity for status with an r of .312 having been achieved. The remaining seventeen personality traits were not significantly related to free throw percentages.

Rebounds

A correlation matrix was used to determine if a significant relationship existed between rebounds and any of the eighteen personality characteristics. Results are presented in Table 7.

None of the independent variables were significantly related to rebounds.

Personal Fouls

Presented in Table 8 are the correlation coefficients between personal fouls and each of the eighteen personality factors of the California Psychological Inventory.

None of the independent variables were significantly related to personal fouls. An inspection of Table 8 indicates that the personality variables of sense of well-being and self-control approached a negative significance at the .05 level.

Assists

The California Psychological Inventory personality traits were correlated with assists and results presented in Table 9.

A positive significant relationship existed between assist and sociability with an r of .305 having been achieved. No other significant relationships existed between assist and other personality traits.

TABLE 7
CORRELATION COEFFICIENTS BETWEEN REBOUNDS AND
EIGHTEEN PERSONALITY TRAITS

Item	Correlation with Criterion
Do	.031
Cs	.056
Sy	.012
Sp	.074
Sa	.055
Wb	.063
Re	.078
So	.144
Sc	-.117
T1	-.164
Gm	-.103
Cm	.251
Ac	.050
Ai	.004
Ie	-.033
Py	-.071
Fx	.020
Fe	-.071

TABLE 8
CORRELATION COEFFICIENTS BETWEEN PERSONAL FOULS AND
EIGHTEEN PERSONALITY TRAITS

Item	Correlation with Criterion
Do	.001
Cs	-.023
Sy	-.012
Sp	.184
Sa	-.074
Wb	-.281
Re	-.217
So	-.220
Sc	-.286
T1	-.114
Gm	.020
Cm	-.127
Ac	-.235
Ai	-.082
Ie	-.225
Py	-.066
Fx	.083
Fe	-.275

TABLE 9
CORRELATION COEFFICIENTS BETWEEN ASSIST AND
EIGHTEEN PERSONALITY TRAITS

Item	Correlation with Criterion
Do	-.002
Cs	.197
Sy	.305
Sp	.212
Sa	.177
Wb	.258
Re	.029
So	.220
Sc	-.130
Tl	.090
Gm	-.081
Cm	.229
Ac	.040
Ai	.058
Ie	.121
Py	.205
Fx	.282
Fe	-.137

Scoring Averages

The correlation coefficients between scoring averages and personality characteristics are presented in Table 10.

A positive significant relationship existed between social presence and scoring average with an r of .306 having been achieved. An r of .327 indicated a positive significant relationship between scoring average and sense of well-being. A positive significant relationship existed between scoring average and communality at the .01 level of significance with an r of .411 having been achieved. An r of $-.374$ indicated a negative significant relationship between scoring average and good impression at the .05 level of significance. The remaining fourteen personality variables were not significantly related to scoring averages.

Intercorrelations Among Personality Traits

The coefficients of correlation among the personality traits are presented in Table 11.

There was an intercorrelation between the personality variables of dominance and capacity for status ($r = .54$); sociability ($r = .56$); self-acceptance ($r = .60$); and Class I ($r = .76$). There was an intercorrelation between capacity for status and socialization ($r = .59$); and Class I ($r = .72$). There was an intercorrelation between sociability and social presence ($r = .68$); self-acceptance ($r = .72$); and Class I ($r = .86$). There was an intercorrelation between social presence and self-acceptance ($r = .55$); and Class I ($r = .78$). There was an intercorrelation between sense of well-being and socialization ($r = .60$);

TABLE 10
CORRELATION COEFFICIENTS BETWEEN SCORING AVERAGE
AND EIGHTEEN PERSONALITY TRAITS

Item	Correlation with Criterion
Do	.068
Cs	.006
Sy	.161
Sp	.306
Sa	.214
Wb	.327
Re	-.119
So	.274
Sc	-.212
Tl	-.087
Gm	-.374
Cm	.411
Ac	-.032
Ai	.017
Ie	.087
Py	-.100
Fx	.082
Fe	-.243

communality ($r = .72$); achievement via conformance ($r = .55$); intellectual efficiency ($r = .71$); Class I ($r = .52$); Class II ($r = .53$); Class III ($r = .61$). The personality variables dominance, capacity for status, sociability, social presence, self-acceptance, and sense of well-being computed Class I. There was an intercorrelation between responsibility and achievement via conformance ($r = .56$); Class II ($r = .78$); and Class III ($r = .50$). There was an intercorrelation between socialization and communality ($r = .51$); achievement via conformance ($r = .54$); and Class II ($r = .69$). There was an intercorrelation between self-control and tolerance ($r = .63$); good impression ($r = .67$); achievement via conformance ($r = .53$); achievement via independence ($r = .65$); psychological mindedness ($r = .64$); Class II ($r = .81$); Class III ($r = .56$); and Class IV ($r = .55$). There was a significant intercorrelation between tolerance and good impression ($r = .51$); achievement via conformance ($r = .58$); achievement via independence ($r = .79$); intellectual efficiency ($r = .56$); psychological mindedness ($r = .62$); Class II ($r = .72$); Class III ($r = .75$); and Class IV ($r = .62$). There was a significant intercorrelation between good impression and achievement via independence ($r = .50$); psychological mindedness ($r = .54$); and Class II ($r = .54$). There was a significant correlation between communality and intellectual efficiency ($r = .55$). The variables of responsibility, socialization, self-control, tolerance, good impression, and communality comprised Class II. There was a significant intercorrelation between achievement via conformance and intellectual efficiency ($r = .75$); Class II ($r = .76$) and Class III ($r = .90$). There was a significant intercorrelation between achievement via independence and psychological

mindedness ($r = .66$); Class II ($r = .58$); Class III ($r = .72$); and Class IV ($r = .64$). There was a significant intercorrelation between intellectual efficiency and Class I ($r = .55$); Class II ($r = .57$); and Class III ($r = .89$). The variables achievement via conformance, achievement via independence, and intellectual efficiency comprise Class III. There was a significant intercorrelation between psychological mindedness and Class II ($r = .58$); Class III ($r = .55$); and Class IV ($r = .64$). There was significant intercorrelation between flexibility and Class IV ($r = .66$). There was significant intercorrelation between femininity and Class IV ($r = .61$). The variables psychological mindedness, flexibility, and femininity comprise class IV.

Multiple Correlation Coefficients and Regression Equations

Correlation coefficients between various combinations of personality traits and each dependent variable will be presented and discussed. Several regression equations are suggested for each dependent variable.

Field Goal Percentages

Multiple correlations and regression equations for predicting field goal shooting percentages from selected personality traits are presented in Table 12.

The combination of responsibility, good impression, intellectual efficiency, achievement via conformance, self-acceptance, sociability, sense of well-being, and communality accounts for only thirty-five percent of the variance in field goal shooting success of the group investigated. Sixty-five percent of the variance is attributable to something other than the personality traits. The percent of variance

accounted for by the combination of items shrank to twenty-one percent when inferred to the population.

TABLE 12

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING FIELD GOAL SHOOTING SUCCESS FROM SELECTED PERSONALITY TRAITS

R	R ²	R ⁻²	Standard Error	Regression Equation
.595	.354	.211	15.077	FG = 2.25(Re)- .46(Gm)+ 1.32(Ie)- 2.16(Ac) +1.79(Sa)- .86(Sy) + .95(Wb)- .86(Cm)- 29.42
.600	.360	.195	15.227	FG = 2.11(Re)- .39(Gm) +1.43(Ie)- 2.30(Ac) +1.74(Sa)- .85(Sy) + .78(Wb)- .85(Cm) + .28(So)-31.26

Free Throw Percentages

Presented in Table 13 are the multiple correlation and regression equations for the prediction of free throw percentages utilizing selected personality variables of the California Psychological Inventory.

The combination of the personality variables that entered the regression equation accounted for thirty-six percent of the variance and

was considered to be caused by factors other than the personality traits which entered into the regression equation. When inferred to the population, the percentage of variance accounted for by the combination of capacity for status, communality, sociability, self-acceptance, dominance, tolerance, intellectual efficiency, responsibility, and achievement via conformance was reduced to twenty percent.

TABLE 13

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING FREE THROW SHOOTING SUCCESS FROM SELECTED PERSONALITY TRAITS

R	R ²	R ⁻²	Standard Error	Regression Equation
.583	.340	.193	24.210	FT = 1.43(Cs) - 3.13(Cm) +2.03(Sy) - 2.18(Sa) + .58(Do) - 2.27(T1) +1.75(Ie) + .92(Re) +54.66
.602	.362	.199	24.125	FT = 1.60(Cs) - 3.02(Cm) +1.84(Sy) - 1.96(Sa) + .66(D0) - 2.52(T1) +2.43(Ie) + 1.38(Re) -1.54(Ac) +44.42

Rebounds

The multiple correlations and regression equations for the prediction of rebounds based upon selected personality characteristics

are presented in Table 14.

TABLE 14

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING REBOUNDS FROM SELECTED PERSONALITY TRAITS

R	R ²	\bar{R}^2	Standard Error	Regression Equation
.632	.399	.222	6.401	Rb = 1.27(Cm)- .40(Ie) + 1.27(Ai)- 1.76(T1) + .63(Re)+ .51(Sp) - .61(Sy)+ .63(Gm) + .41(Fx)- .28(Sc)- - 21.58
.645	.416	.222	6.403	Rb = 1.31(Cm)- .42(Ie) + 1.17(Ai)- 1.71(T1) + .71(Re)+ .52(Sp) - .89(Sy)+ .76(Gm) + .51(Fx)- .32(Sc) + .45(Sa)- 27.64

The combination of the variables communality, intellectual efficiency, achievement via independence, tolerance, responsibility, social presence, sociability, good impression, flexibility, self-control, and self-acceptance accounts for only forty-two percent of variance in rebounding by the group investigated. This leaves

fifty-eight percent attributed to factors other than the personality traits of the California Psychological Inventory. The percent of variance on rebounds accounted for by this combination of personality variables is reduced to twenty-two percent when inferred to the population.

Personal Fouls

The multiple correlations and regression equations for predicting personal fouls using the personality characteristics of the California Psychological Inventory are presented in Table 15.

A combination of the variables self-control, psychological mindedness, sense of well-being, communality, good impression, achievement via conformance, sociability, social presence, responsibility, dominance, socialization, and self-acceptance accounted for fifty percent of the variance in the prediction of personal fouls. Fifty percent of the variance was attributed to factors other than the personality characteristics used in this study. The percent of variance attributed to the personality characteristics was reduced to thirty-two percent when adjusted for errors of random sampling.

Assists

Shown in Table 16 are the multiple correlations and regression equations for the prediction of the criterion variable assist based upon the California Psychological Inventory personality variables.

Forty-two percent of the variance in predicting assists from selected personality items was accounted for by combinations of the variables sociability, flexibility, socialization, femininity, dominance, intellectual efficiency, sense of well-being, responsibility, self-control, psychological mindedness, and self-acceptance.

TABLE 15

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING
PERSONAL FOULS FROM SELECTED PERSONALITY TRAITS

R	R ²	\bar{R}^{-2}	Standard Error	Regression Equation
.708	.502	.336	2.041	PF = - .25(Sc)+ .72(Py) - .33(Wb)+ .60(Cm) + .34(Gm)- .17(Ac) - .28(Sy)+ .14(Sp) - .11(Re)+ .07(Do) + .04(So)+ .84
.710	.501	.319	2.067	PF = - .24(Sc)+ .71(Py) - .34(Wb)+ .61(Cm) + .32(Gm)- .17(Ac) - .25(Sy)+ .14(Sp) - .13(Re)+ .09(Do) + .04(So)- .07(Sa) + 1.80

Fifty-eight percent was attributed to factors other than the personality traits. When extrapolated to the general population, the percentage of variance accounted for by the personality variables shrank to twenty-two percent.

TABLE 16

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING ASSIST FROM SELECTED PERSONALITY TRAITS

R	R^2	\bar{R}^2	Standard Error	Regression Equation
.633	.400	.224	1.816	Ass = .12(Sy)+ .20(Fx) - .08(Fe)- .06(Do) - .15(Ie)+ .11(Wb) + .09(Re)- .11(Sc) + .23(Py)- 3.18
.644	.415	.220	1.821	Ass = .08(Sy)+ .20(Fx) + .07(So)- .09(Fe) - .09(Do)- .15(Ie) + .11(Wb)+ .13(Re) - .11(Sc)+ .25(Py) + .12(Sa)- 4.48

Scoring Averages

The multiple correlations and step-wise regression equations for the prediction of scoring averages utilizing the eighteen personality traits are presented in Table 17.

A combination of the variables communality, femininity, social presence, socialization, intellectual efficiency, achievement via independence, tolerance, achievement via conformance, and sociability

was responsible for fifty-three percent of the variance in predicting scoring averages. Forty-seven percent of the variance was ascribed to variables other than the personality traits as identified in this study. The percent of variance on scoring averages accounted for by this combination of personality variables was reduced to forty-one percent when inferred to the population.

TABLE 17

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING SCORING AVERAGES FROM SELECTED PERSONALITY TRAITS

R	R ²	\bar{R}^2	Standard Error	Regression Equation
.722	.521	.414	3.365	Scav = .67(Cm)- .39(Fe) + .21(Sp)+ .19(So) - .27(Ie)+ .68(Ai) - .35(T1)- .20(Ac) - 7.28
.729	.531	.410	3.377	Scav = .67(Cm)- .37(Fe) + .29(Sp)+ .19(So) - .23(Ie)+ .65(Ai) - .38(T1)- .18(Ac) - .15(Sy)-7.94

Basketball Achievement Scores

Multiple correlations and regression equations for predicting

a total basketball performance scores are presented in Table 18.

TABLE 18

MULTIPLE CORRELATION STATISTICS AND REGRESSION EQUATIONS FOR PREDICTING BASKETBALL ACHIEVEMENT SCORES FROM SELECTED PERSONALITY TRAITS

R	R ²	\bar{R}^2	Standard Error	Regression Equation
.472	.223	.123	35.314	Ba = 1.21(Do)+ 2.00(Cs) + 2.56(Re)- 4.43(Ac) + 2.41(Ie)+ 14.13
.507	.258	.140	34.970	Ba = (Do)+ 2.56(Cs) + 3.16(Re)- 4.08(Ac) + 2.97(Ie)- 2.47(T1) +14.51

The combination of the variable dominance, capacity for status, responsibility, achievement via conformance, intellectual efficiency, and tolerance accounts for only twenty-six percent of the predictability of basketball achievement scored. A variance of seventy-four percent was attributed to factors other than these personality traits for the subjects involved in the study. The percent of variance accounted for by this combination of personality traits was reduced to fourteen percent when inferred to the total population.

Discussion

The results are discussed in terms of the problem and subproblem

as formulated in the statement of the problem. The problem was to determine if a significant relationship existed between personality characteristics as identified in the California Psychological Inventory and the various performance results in the areas of field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages of high school male varsity basketball players in the Southwest Preparatory Conference. The subproblem of this study was to formulate possible prediction equations for field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages based upon the predictor variables of the eighteen personality items as defined by the California Psychological Inventory.

Results of Correlations Between Basketball Performance Areas and Each of the Eighteen Personality Items

The first question of the problem was in regard to the relationship between criterion variable field goal percentages and the eighteen personality items. The data secured from the full subject model, as applied to the possible relationship between field goal percentages and any of the eighteen personality items, indicated a positive statistical relationship at the .05 level between the criterion variable of field goal percentages and the predictor personality variable of responsibility. This indicated that the more responsible a basketball player considers himself to be, the higher his field goal percentages will be.

A correlation matrix was computed to answer the question regarding the possible relationship between free throw percentages and each of the eighteen personality variables. The results obtained

from the treatment of the data indicated a positive statistical relationship existed at the .05 level of significance between the basketball performance variable of free throw percentages and the personality variable for capacity for status. The significant relationship suggests that the more self-assured a basketball player is inclined to be the higher a player's free throw percentage will be.

A third question posed by the statement of the problem was in regard to the relationship between the criterion variable of rebounds and each of the predictor personality variables. The results obtained from the computed correlation matrix indicated that none of the personality variables were significantly related to the criterion variable, rebounds.

A fourth question implied in the statement of the problem was in reference to the existence of a significant relationship between the basketball performance variable of personal fouls and each of the eighteen personality items in the California Psychological Inventory. The results of the correlation matrix did not show a statistically significant relationship between the criterion variable, personal fouls and any of the eighteen personality variables.

Inherent in the statement of the problem was the question concerning the possible relationship between the criterion basketball performance variable of assists and any of the eighteen personality variables.

The treatment of the data utilizing a correlation matrix indicated a positive significant relationship at the .05 level of significance between the criterion variable, assists, and the predictor personality variable of sociability. The results are suggestive of a

positive relationship that indicates the more a basketball player is outgoing, sociable, and possesses a participative temperament, the more assists he is likely to have.

A final question posed by the statement of the problem was in regard to the relationship between the criterion variable of scoring averages and each of the predictor personality variables. The results obtained from the treatment of the data indicated a positive significant relationship existed between the criterion variable, scoring averages and the personality items of social presence, and sense of well-being at the .05 level of significance. The positive significant relationship between scoring averages and social presence indicates that the more poised and self-confident a basketball player is, the higher the player's scoring average is likely to be. The positive significant relationship between scoring averages and the sense of well-being indicates that the more likely he is to have positive feelings of physical and psychological well-being, the higher a basketball player's scoring average. The results of the correlation matrix also indicated a positive significant relationship between scoring averages and the personality variable, communality, at the .01 level of significance. The positive significant relationship between the criterion variable, scoring averages and the predictor variable, communality, indicates that the more consistent a basketball player is in responding to situations which appear to have a high degree of sameness, the higher the player's scoring average. The treatment of the data resulted in a negative relationship between the criterion variable, scoring average, and the personality variable, good impression at the .05 level of significance. The negative relationship between

the criterion variable, scoring average, and the personality variable, good impression, indicated that the lower a basketball player's good impression score, the higher the player's scoring average. This indicates that due to the basketball player's poise, self-assuredness, and positive feelings of personal psychological well-being, he is not dependent upon how others react toward him in order to maintain his positive self-concept.

Intercorrelations Among Personality Traits

The fairly sizeable correlation coefficients among the Class I variables with the exclusion of sense of well-being would appear to indicate that these variables are measuring common factors. The relatively high correlations among the personality traits included in Class II show that they tend to load on a common factor or factors. There was little evidence of a high correlation among the Class III variables as well as among the Class IV variables.

Results of Multiple Stepwise Regression for Basketball Performance Areas and Eighteen Personality Items

The first question of the subproblem was in reference to formulating a meaningful prediction equation for field goal percentages based on the eighteen personality variables. The data secured from the full subject model regarding the first question suggested by the subproblem indicated a relatively low predictability percentage. The prediction percentage (\bar{R}^2) obtained for field goal percentages was .195. Since approximately eighty percent of the variance can be attributed to factors other than the personality traits, the regression equation for field goal percentages was of no value.

The second question suggested by the subproblem referred to the possibility of calculating a meaningful prediction equation for free throw percentages using eighteen personality variables as predictors. The results of the full subject model as applied to this question in the subproblem, suggested only relatively low predictability as evidenced by an \bar{R}^2 of .199. The equation would be of very little value in practical situations.

The subproblem implied in the statement of the problem called for the formulation of meaningful prediction equation for rebounds based upon the predictor variables as defined in the California Psychological Inventory. A low to moderate level of predictability as evidenced by an \bar{R}^2 of .222 was calculated for rebounds based upon eighteen personality items. The functional value of the equation was limited by the fact that seventy-eight percent of variance could be attributed to factors not contained in the equation. The prediction equation was considered to be of no practical value.

A fourth question posed by the subproblem as defined in the statement of the problem was the formulation of a meaningful prediction equation for personal fouls based upon the eighteen personality traits selected for this study. The \bar{R}^2 of .319 indicated only a moderate percentage of predictability. The prediction equation was not considered valid for predicting the number of personal fouls for individual basketball players based upon the predictor variables of personality traits.

The prediction equation for assists based upon the eighteen personality traits was found to be of little value. An \bar{R}^2 of .220 was calculated for this equation. A variance of seventy-eight percent

was attributed to factors not contained in the equation. Due to the large degree of variance contained within the equation, no practical value could be attached to the prediction equation for calculating assists utilizing personality variables as predictors.

A question inherent in the formulation of the subproblem was the possibility of designing a meaningful prediction equation for scoring averages based upon personality traits. Results for the prediction of scoring averages utilizing personality variables indicated only a moderate predictability percentage ($\bar{R}^2 = .410$). A variance of forty-one percent was attributed to the personality characteristics. Hence, the prediction equation was unacceptable for predicting scoring averages based upon the predictor variables selected for this study.

A final question indicated by the statement of the subproblem was the formulation of a practical regression equation for basketball achievement scores based upon selected personality characteristics. The prediction equation was considered to be of no value due to an adjusted \bar{R}^2 of .143. This meant that only fourteen percent of the variance could be accounted for by the personality traits used in this study.

The Results Compared to Other Studies of Personality, General Athletic Performances, and Basketball Performance

Previous studies which have been done on the relationship among personality and specific athletic performances both confirm and contradict the findings of this study. Feigl⁵¹, Leithwood⁵², Stebbins⁵³,

⁵¹Feigl.

⁵²Leithwood.

⁵³Stebbins.

Smith⁵⁴, and Maglisho⁵⁵ found no significant relationships between personality characteristics and athletic performance.

These findings were in contradiction to the findings of this study. Stevens⁵⁶ and Simpson⁵⁷ reported that levels of performance have a relationship to specific personality traits of athletes. Coffman⁵⁸ reported that significant relationships occur between certain personality characteristics and some selected basketball performance categories. Coffman's findings are supported by the results of this study.

Coffman⁵⁹ found no functional prediction equations for any of the basketball performance areas based on selected personality traits in the full subject model. Similar results were obtained by this investigator. However, it should be noted that Coffman found eight functional prediction equations in the restricted subject models. Rushall⁶⁰ concluded on the basis of his findings that functional prediction equations for athletic performance based solely upon personality traits could not be supported. The findings of this study confirm Rushall's conclusions.

⁵⁴Smith.

⁵⁵Maglisho.

⁵⁶Stevens.

⁵⁷Simpson.

⁵⁸Coffman.

⁵⁹Coffman.

⁶⁰Rushall.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine if a significant relationship existed between each of six basketball performance areas and eighteen personality traits, or between each of the basketball performance areas and any combination of the eighteen personality characteristics used in the study. The eighteen personality characteristics used in the study were dominance, capacity for status, sociability, social presence, self-acceptance, sense of well-being, responsibility, socialization, self-control, tolerance, good impression, communality, achievement via conformance, achievement via independence, intellectual efficiency, psychological mindedness, flexibility, and femininity. The study also sought to determine if meaningful regression equations could be formulated in predicting field goal percentages, free throw percentages, rebounds, personal fouls, assists, and scoring averages from the eighteen personality items of the California Psychological Inventory.

Forty-five subjects from Southwest Preparatory Conference schools were administered the California Psychological Inventory. The subjects rated themselves on a scale of one to five on each of four hundred eighty items which comprised the testing instrument. The personality instrument was administered in a group setting at the individual schools. The results for each subject in the basketball

performance areas were compiled during the winter tournament of the Southwest Preparatory Conference which was held February 19-21 in Fort Worth, Texas. The personality data were collected on each subject during the spring semester of 1977. A correlation matrix and stepwise multiple regression analysis were computed.

Conclusions

Based upon the data obtained in this investigation, the following conclusions are appropriate. These conclusions should be considered within the limitations imposed by the population and measuring instrument.

1. Field goal percentage is significantly related to capacity for status; assists are significantly related to sociability; and scoring average has a significant relationship to social presence, sense of well-being, good impression, and communality.

2. Reliable functional regression equations for the prediction of basketball performance areas based on personality traits cannot be supported as valid predictors of these areas.

3. Factors other than the eighteen personality traits measured by the California Psychological Inventory were found to be more influential in basketball performance than were the personality traits.

Recommendations

Based upon the results of this study the following recommendations are suggested:

1. Since the study applied to individual personality items, it is recommended that a study for setting up regression equations for predicting basketball performance results from personality classes be investigated.

2. Since the results of this study applies only to male varsity basketball players, it is recommended that the possible relationships among basketball performance areas and personality characteristics for female varsity basketball players be investigated.

BIBLIOGRAPHY

- Bentson, T. B. and Summerskill, John. "Relation of Personal Success in Intercollegiate Athletics to Certain Aspects of Personal Adjustment." Research Quarterly 26 (March, 1955): 8-14.
- Biddulph, L. G. "Athletic Ability and the Personal and Social Adjustment of High School Boys." Research Quarterly 25 (March 1954): 1-7.
- Booth, E. G. Jr. "Personality Traits of Athletes as Measured by the MMPI." Research Quarterly 29 (May 1958): 127-138.
- Cattell, Raymond B., and Stice, Glen F. Handbook for the Sixteen Personality Factor Questionnaire. Champaign, Illinois: Institute for Personality and Ability Testing, 1957.
- Coffman, Gary G. "Personality as Compared to Performance of Basketball Players in the Southeastern Conference for the 1973-74 Season." Ed. D. Dissertation, University of Mississippi, 1974.
- Cratty, Bryant J. Psychology in Contemporary Sport: Guidelines for Coaches and Athletes. Englewood Cliffs: Prentice-Hall, Inc., 1973.
- Davidson, Richard A. "A Study of Personality Traits and Value Systems of High School Athletes and Non-athletes." Ed. D. Dissertation, University of Kentucky, 1967.
- Ellenburg, Joe K. "The Predictive Value of Selected Physical Variables in Determining Competitive Performance in High School Basketball." Ed. D. Dissertation, University of Alabama, 1970.
- Feigl, Frank L. "The Relationship of Personality to the Sport of Gymnastics." Ph. D. Dissertation, Indiana University, 1974.
- Flanagan, Lance. "A Study of Some Personality Traits of Different Physical Activity Groups." Research Quarterly 22 (October 1951): 312-323.
- Gough, Harrison G. Manual for the California Psychological Inventory, Revised Edition. Palo Alto, California: Consulting Psychologists Press, 1969.
- Hathaway, Starke R. and McKinley, Charnley J. Minnesota Multiphasic Personality Inventory, New York: Psychological Corporation, Revised Form. 1951.

- Hunt, David H. "A Cross Racial Comparison of Personality Traits between Athletes and Nonathletes." Research Quarterly 40 (December 1969): 704-707
- Keogh, Jack. "Relationship of Motor Ability and Athletic Participation in Certain Standardized Personality Measures." Research Quarterly 30 (December 1959): 438-445
- Leithwood, Kenneth A. "The Personality Characteristics of Three Groups of Weight Trainers." M.P.E. Thesis, University of British Columbia, cited by Weiss and Singer. 1968
- Maglischo, Ernest W. "The Influence of Personality on Achievement in Age-Group Competitive Swimming." Ph. D. Dissertation, Ohio State University, 1974.
- Merriman, Burton J. "Relationship of Personality Traits to Motor Ability." Research Quarterly 31 (May 1960): 163-173
- Nie, Norman H.; Hull, C. Hadlai; Jenkins, Jean G.; Steinbrenner, Karin; and Bent, Dale H. Statistical Package for the Social Sciences. New York: McGraw-Hill, 1975.
- Rushall, Brent S. "An Investigation of the Relationships between Personality Variables and Performance Categories in Swimmers." Ph. D. Dissertation, Indiana University, 1967.
- _____. "The Demonstration and Evaluation of a Research Model for the Investigation of the Relationship between Personality and Physical Performance Categories." Ph. D. Dissertation, Indiana University, 1969.
- Schendel, Jack. "Psychological Differences between Athletes and Non-participants in Athletics at Three Educational Levels." Research Quarterly 36 (March 1965): 52-67
- Simpson, Charles. "Personality Traits and Performance in Women's Gymnastics." Ph. D. Dissertation, Indiana University, 1974.
- Slusher, Howard S. "Personality and Intelligence Characteristics of Selected High School Athletes and Nonathletes." Research Quarterly 35 (December 1964): 539-545
- Smith, Robert D. "An Analysis of the Relationship between Personality Traits and Success in Swimming and Diving." M.S. Thesis, Wisconsin State University-La Crosse, cited by Weiss and Singer. 1970
- Stebbins, Clay. "Achievement in Sport as a Function of Personality and Social Situation." M.S. Thesis, University of Wisconsin, cited by, Weiss and Singer. 1971
- Stevens, Thomas B. "A Personality Analysis of College Baseball Players." Ed. D. Dissertation, University of Alabama, 1973.

- Thorpe, Louis P.; Clarke, Willis W.; and Tregs, Ernest W.
California Test of Personality. Revised Form. Los Angeles:
California Test Bureau, 1953.
- Weiss, Raymond A.; and Singer, Robert N. (eds), Completed Research in
Health, Physical Education, and Recreation 18 vols. (Washington,
D.C.: American Association for Health, Physical Education, and
Recreation--National Education Association) (1968) 10:14
- Wilson, Phillip K. "Relationship between Motor Achievement and
Selected Personality Factors of Junior and Senior High
School Boys." Research Quarterly 40 (December 1969).
- Wright, Paul T. "Personality Traits of Athletes in Selected Field
Events." Ph. D. Dissertation, University of Utah, 1973.