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A COMPARATIVE STUDY OF THE ACADEMIC ACHIEVEMENTS, INTERESTS, AND PERSONALITY TRAITS OF ATHLETES AND NON-ATHLETES

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A COMPARATIVE STUDY OF THE ACADEMIC ACHIEVEMENTS, INTERESTS,

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A COMPARATIVE STUDY OF THE ACADEMIC ACHIEVEMENTS, INTERESTS, AND PERSONALITY TRAITS OF ATHLETES AND NON-ATHLETES

CHAPTER I

INTRODUCTION

During the past fifty years American college athletics have grown into a program of tremendous proportions and one which cuts across the path of all education. It involved the activities of many people, including the president, the board of regents, the faculty, the financial organization of the institution, the department of athletics, the alumni, the student, the friends of the institution, and the lay public. While some laymen and professional educators earnestly believe that the educative values claimed for athletes are exaggerated, there are many leading educators who view the experiences to be gained through competitive sports as extremely important in the education of youth for the role of leadership and responsibility in a democratic society. This latter philosophy of education is far removed from the early attitudes and feeling which our forefathers had toward competitive activities.

Early Attitudes Toward Play

History reveals that competitive games have been a part of community life since early colonial days, but did not play a very prominent

role in education until the period following the Civil War. The value of games in education was neither understood nor appreciated in the early part of the nineteenth century and the prevailing attitudes reflected the narrow religious ideals of the old Franke School philosophy which was well summarized by Judd:

> Play must be forbidden in any and all of its forms. The children shall be instructed in this matter in such a way as to show them, through the presentation of religious principles, the wastefulness and folly of all play. They shall be led to see that play will distract their hearts and minds from God, the eternal Good, and will work nothing but harm to their spiritual lives. Their true joy and hearty devotion should be given to their blessed and holy Saviour and not to earthly things, for the reward of those who seek earthly things is tears and sorrow.[1]

However, play could not be suppressed as it represented one of the oldest phases of man's education. These simple, primitive and natural forms of activity were continuous parts of his educational experiences, but this did not make these activities acceptable to everyone as being an essential part of the educational system.[2] Many religious and educational leaders disregarded the educative and moral values involved in play and believed that educational thought and practice was not ready to accept play or any other activity as a part of the college curriculum. Despite these prevailing attitudes, youth was not to be restrained and some slow progress was made during the later part of the nineteenth century in separating educational philosophy from the older forms of classicism and religious domination.

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[1]C. H. Judd, Genetic Psychology for Teachers (New York: D. Appleton and Company, 1903), p. 72.

[2]Thomas Woody, Life and Education in Early Society (New York: The Macmillan Company, 1949), p. 7.

The Change in Attitudes

The year of 1900 marked the beginning of a new era of educational thought and practice in the United States. The works of John Dewey, William James, G. Stanley Hall, Groos, Thorndike and others were instrumental in creating a philosophy of education based on a better understanding of children and youth, and the society in which they lived. This newer philosophy gave meaning and importance to such matters as play, expression, and activity, and assigned significance to them as a means of education. Dewey held that the ideal school was society in the miniature and that education is life, not a preparation for life.[1] Education, then, must relate itself to the immediate interests of the individual.

Thus began the transition from impromptu participation in games and sports at the community level to the organized intramural games between classes and student campus groups. The many new and interesting games being played in the communities played an important part in the student's recreational life whenever free time permitted departure from the monotony of the highly formalized, classical curriculum. This new philosophy soon struck a responsive chord in some people as was evidenced by the remarks of McCurdy:

> The college until recently has only accepted responsibility for the development of a curriculum of instruction. It is now accepting responsibility for the development and regulation of a curriculum of activity which is related to health and character-building. The college has only recently realized clearly the fact that many boys go to college for something besides a

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[1]John Dewey, Democracy and Education (New York: The Macmillan Company, 1916), p. 95.

scholastic education; some of them are more interested in athletics than in the literary education which the college offers.[1]

As games and sports became better organized, interests increased and interschool contests were arranged with other educational institutions. Competition became so keen that the need for expert coaching could not be denied. Thus some former athlete was hired as athletic coach with no thought being given to the academic qualifications for the position. Student managers acted as his assistants. Consequently, as each student manager graduated from college, another student had to be selected as his replacement. These frequent personnel changes could not help but create additional problems for those in administration during the next few years.

From 1900 to 1910, athletics grew at such a rapid pace that the constant turnover in student personnel caused educational institutions to become concerned by the shortcomings of their athletic programs. The problems created were entirely new to educators and no one seemed to know how to solve them. The situation deteriorated to the extent that President Theodore Roosevelt was prompted to call a meeting of college authorities at the White House in Washington, D. C. which resulted in the formation of the Intercollegiate Athletic Association. In 1910, this body became the National Collegiate Athletic Association which was to serve in an advisory capacity to the colleges in an effort to bring order out of chaos.[2]

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[1]J. H. McCurdy, "Some Ethical Problems Surrounding Intercollegiate Athletics," Proceedings, National Collegiate Athletic Association, December, 1911, p. 37.

[2]F. W. Luehring, "The National Collegiate Athletic Association," Journal of Health and Physical Education (December, 1947), p. 707.

Even after educators finally recognized the existence of athletics on the campus, this did not constitute recognition of athletics as a function of education. Athletics, particularly football, possessed the power to disrupt the orderly processes of teaching and learning in the colleges. Consequently as the tempo of athletic competition increased, faculties became openly antagonistic to the sports program. Coaches, players, and those who supervised the program were generally regarded as being somewhat inferior to, or at least different from, members of the academic faculty and general student body.[1] Rigid academic requirements were imposed on all students who desired to compete in athletics. Because of these rigid requirements and the prevailing attitudes toward those who were associated with athletics, an open conflict developed with the faculty arrayed against the students, alumni, and general public. By 1915, football had been abandoned by a number of colleges.

However, sports had emerged primarily from community life rather than from educational philosophy. Public opinion favored the return of football so strongly that few institutions could resist the pressure, and football was reinstated in those institutions which had dropped it from their programs. Although this reinstatement of football did bring about gradual reforms and controls over the college athletic programs, the breach that had been created between things athletic and things academic was by no means completely healed.

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[1]Harry A. Scott, Competitive Sports in Education (New York: Harper and Brothers, 1951), p. 94.

Athletics, Good or Bad

Whether this acceptance of athletics into the college program had been good or bad for our educational system remained a controversial question which educators attempted to answer for many years. Some believed that the physical risks involved plus the time and energy expended to perfect skills in competitive sports were exorbitant in relation to the demonstrable educational outcomes; while others believed that the many values to be gained through competitive sports were unique and could be acquired only in this particular area of the college curriculum.

Ever since the beginning of athletics, scholastic eligibility of those who participated in sports had been a persistent problem. Those who relied primarily upon research and based their attitudes on facts were not so certain of the supposedly inferior academic status of the athlete as were those who generalized from isolated experiences or based their feelings and attitudes on either prejudices or superstitions. In fact, recent psychological studies bear evidence that athletes are not generally long on brawn and short on brain. Actually the case is quite the opposite.[1]

During the past few years there has been considerable publicity regarding the academic achievements of various college athletes. This has lead some educators to believe that if a group of athletes and non-athletes were matched equally by controlling such variables as age, sex, and intelligence that the athletic group would surpass the

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[1]R. G. Bongart, "Why Discriminate in Sports?" School Activities, XXVI (1955), 163-64.

non-athletic group in academic achievement and also possess certain personality traits and interest patterns which would be characteristic of their group.

Many educators believe that competitive sports are endowed with opportunities for the development of a unified personality in that the athlete has numerous opportunities to give, to take, to win, to lose, to cooperate, to conform, to think and act independently, but always in relation to the welfare of the group and consistent with the rules of the game. Certainly these desirable personality traits and the proper social adjustment in human relations are important outcomes of any educational program.[1] Most people agree that action under game conditions requires a devotion to purpose and a disciplining of self that is beyond the demands of ordinary social activity. In these situations there are unexcelled opportunities for the development of a distinctive personality pattern of leadership, self-control, and respect for the rights of other people. Still there are some critics who openly charge that athletic programs have had adverse effects upon the attainment of these desirable personality outcomes.[2]

This presents two very interesting questions which are extremely important to those who are associated with athletics and responsible for the guidance, eligibility, and personal problems confronted by the

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[1]Educational Policies Commission (NEA), School Activities (Washington, D. C.: The Commission, National Education Association, 1954).

[2]American Association for Health, Physical Education, and Recreation, Children in Focus, Their Health and Activity, Chapter XII, "What Stand on Competition?" View of a Psychologist--W. Grant Doblstrom (Washington, D. C.: The Association, 1954).

college athlete. First, just exactly what type of personality does the college athlete develop from a competitive athletic environment; and second, does this participation in college athletics seriously affect the over-all academic achievement?

Statement of the Problem

Previous studies have indicated that differences do exist in the personalities and academic achievements of athletes and non-athletes and that there was a definite need for further study concerning this group of students. Therefore, the general purpose and intent of this study was to determine if there were any significant differences in the athletic and non-athletic students on the basis of comparing a control group of athletes and an experimental group of non-athletes who had been enrolled at the University of Oklahoma since the fall of the school year 1955-56. Specifically, this study was designed to determine experimentally if there were any statistically significant differences between the athletic and non-athletic groups in their academic achievements over six semesters of college work in total grade-point averages and course-credit hours earned; and then by means of a battery of selected personality and interest tests, attempt to find if any personality traits or vocational interest patterns existed which might be considered as a characteristic common to most college athletes.

Delimitation of the Study

This study was limited to include only those full-scholarship, non-transfer, male athletes who first enrolled in the University of Oklahoma in the fall of the school year 1955-56. Those who were

transfer students or were on partial scholarship were not considered. By no means were all of the athletes who attended the University of Oklahoma included in this experimental study.

At the time the data for this research were gathered the full-scholarship group had completed six continuous semesters of college work and all grade-point averages and course-credit hours are based upon the academic achievements of the athletic and non-athletic groups for this period of time. The primary reason for limiting this study to six semesters was the necessity of maintaining personal contact with each individual while gathering the personality and interest test data. Complete academic data were available on each individual subject for these six semesters, but some members of the two groups did not continue their education straight through the senior year. Therefore, the data obtained for the six continuous semesters provided the most accurate data for experimental comparisons.

The control of several variables in this experimental study placed certain limitations on the athletic and non-athletic groups. These variables were chronological age, sex, college classification, and intelligence scores obtained from the freshman placement tests.

Definitions

The limitation to include only those athletes who were on full-scholarship made it necessary to define exactly what a full-scholarship was in order that clarity in thinking and meaning be established.

The rules and regulations which govern athletic scholarships at the University of Oklahoma were clearly defined by the Missouri

Valley Intercollegiate Athletic Association.[1] Institutions are permitted to grant athletic scholarships by considering each individual student's need and athletic ability. Each institution through its scholarship committee sets and publishes the minimum requirements for both granting and renewing athletic grants-in-aid.

The student who entered college directly from high school must have ranked in the upper two-thirds of their high-school class or earned a percentile rank of at least fifty on the norms for the entering freshman class of the institution on the Ohio State Psychological Examination, or an equivalent psychological examination.

Grants-in-aid are not awarded for more than one academic year (September to June) and may be awarded for a lesser period or even discontinued in case of low scholarship, misconduct, or failure to remain enrolled.

The total amount of any scholarship may not exceed the cost of fees, tuition, books, room and board; the total amount of each income from any scholarship and employment may not exceed $135 for the academic year. This fifteen dollars per month must be earned by the athlete and all alumni financial aid channeled through the institution.

Thus the full-scholarship athlete in this study was defined as one who received a full grant-in-aid for payment of all the preceding expenditures incurred at college and did not include those athletes who received only partial scholarships for participating in college

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[1] Rules and Regulations Governing Athletics in the Missouri Valley Intercollegiate Athletic Association (Lawrence, Kansas: The World Company, 1956), pp. 13-14.

athletics.

Procedure of the Study

One of the major problems confronted in this experimental study was the matching of the athlete and non-athlete equally on the basis of the controllable variables chronological age, sex, college classification, and intelligence. The major field of study for each individual was considered in the beginning, but it soon became evident this variable could not be controlled in this experiment. Therefore, only a brief summarized account of these various fields of study was presented for informational purposes. Matching was done on the basis of data secured from the University Office of Admissions and Records. This included scores on the Ohio State Psychological Examination and the Iowa High School Content Examination taken by the students at the time they entered as freshmen.

After the subjects were equally paired, the academic record of each individual was examined closely to determine the scholastic achievement for each member of the athletic and non-athletic group. The two groups were given a battery of four personality and interest tests which had been selected on the basis of their validity, reliability, and national recognition as being outstanding instruments of measurement. These tests were: (1) the Allport-Vernon Study of Values, (2) the Guilford-Zimmerman Temperament Survey, (3) the Minnesota Multiphasic Personality Inventory, and (4) the Strong Vocational Interest Blank for Men.

Treatment of the Data

The academic records of the two groups were used to obtain the mean grade-point average and the mean number of course-credit hours for each athlete and non-athlete. These means were compared and the mean differences treated statistically to determine whether any significant differences existed between the two groups academically.

The data which were obtained from the battery of personality and interest tests were computed into mean scores for each individual trait and scale on the four tests. By comparing these mean scores, the mean differences were found between each athlete and non-athlete. These mean differences were then treated statistically to determine whether any significant differences existed between the two groups in the areas of personality development and vocational interests.

It was assumed in this study that no true differences existed between the athletic and non-athletic groups. Therefore the following null hypotheses were formulated to test the reliability of the mean differences between the two groups in the areas of academic achievement, personality structure, and vocational interest patterns.

1. There is no significant difference in grade-point average between the athletic and non-athletic groups.

2. There is no significant difference in the total number of college hours earned between the athletic and non-athletic groups.

3. There are no significant differences on any value in the personality responses to the Allport-Vernon Study of Values test between the athletic and non-athletic groups.

4. There are no significant differences on any trait in the personality responses to the Guilford-Zimmerman Temperament Survey between the athletic and non-athletic groups.

5. There are no significant differences on any trait in the personality responses to the Minnesota Multiphasic Personality Inventory between the athletic and non-athletic groups.

6. There are no significant differences on any occupational scale in the vocational interest responses to the Strong Vocational Interest Blank for Men between the athletic and non-athletic groups.

CHAPTER II

A REVIEW OF THE LITERATURE

A review of the research indicated that educators have been attempting to get at all the facts in relation to the relative academic abilities of athletes and non-athletes since the turn of the century when college athletics first became an integrated part of our total educational system. No one seemed to be exceedingly interested in the study of personality structure as the majority of this research has been conducted during the last twenty years. Although there have been numerous studies made concerning the academic attainments and several studies investigating personality formation in athletes in high schools and colleges, the conclusions have not seemed to agree in all cases. The following studies represent a summary of the outstanding investigations concerning the effects of athletics upon scholarship and personality in the institutions of higher education.

Related Academic Studies

One of the most extensive investigations was the one conducted by Savage[1] for the Carnegie Foundation concerning the academic records of 2,787 athletes and 11,480 non-athletes in fifty-two representative

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[1]Howard J. Savage, College Athletics and Scholarship, Carnegie Foundation for the Advancement of Teaching, Twenty-second Annual Report (New York, 1927).

colleges and universities in the United States. The general conclusion of the study relative to academic achievement was that the scholastic grades of the athletes seemed to average slightly lower than those of the non-athletes; but the ascertainable difference in favor of the non-athlete was probably so slight that it did not possess statistical significance. No positive statements were made concerning the real statistical differences which existed between the athletes and non-athletes in the study.

Ruble[1] in a study at Indiana University compared a group of athletes with the norms of 6500 students from thirty-four liberal arts colleges throughout the country. The conclusions were that the academic average for lettermen was superior to the academic average for all men students, and that a very close relationship existed between intelligence and actual success in athletics.

Groves[2] investigated a group of football players and non-football players at Fresno State Teachers College to determine if football players neglect their academic work because of their athletic activities. The findings were that the football players did better than the non-athlete in scholastic achievement, but there was not enough difference to be considered statistically significant. This seemed to justify their opinion that the football player's school work did not suffer academically from their participating in football

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[1]Vern W. Ruble, "A Psychological Study of Athletes," American Physical Education Review, XXIII (1928), 219-34.

[2]John W. Groves, "Football Players versus Non-Football Players," Journal of Educational Research, XVII (1928), 64.

activities.

In a survey at the University of Wisconsin[1] the evidence suggested that athletes were superior in academic achievement. The results showed that the athletes consistently excelled the average grade of the University as a whole for the period of the six years studied.

Hindman[2] chose all the male students who entered Ohio State University as freshmen in the fall of 1923, a total of 1327 students. Two divisions composed of athletes and non-athletes were set up. In comparing the scholastic records of athletes with those of non-athletes, the former were found to be slightly inferior, but the difference was not significant statistically. Hindman's conclusion was that the study did not furnish any direct indication that athletes secure lower grades than non-athletes, nor did it indicate that participation in athletics was detrimental to scholarship.

Hutchinson[3] made a study of 40 athletes in six sports and 67 non-athletes at Cornell College. Although his data were based on too small a number of students to be considered significant for conclusions, they did indicate, however, that the athletes were not lower in intelligence than the non-athletes and that the differences between the two groups were too small to be statistically significant.

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[1]American School Board Journal, "Highest Ranks in Studies Made by Athletes," American School Board Journal, LXXVII (1929), 117.

[2]Darwin A. Hindman, "Athletics and Scholarship at the Ohio State University," School and Society, XXX (1929), 93-96.

[3]Mark E. Hutchinson, "College Athletics and Scholarship," School and Society, XXIV (1929), 151-52.

Maney[1] studied the scholarship of football players at Transylvania College during a period of ten years. He concluded that football contributed to the somewhat lower grades of the athletes. This belief was apparently further sustained by the fact that football players made higher grades in the second semester when they were not engaged in athletic participation.

Cooper[2] studied the effects of participation in athletics upon scholarship as measured by the Carnegie Foundation Achievement Test. All subjects were divided into two main groups: (1) athletes, and (2) non-athletes. After testing 4500 college seniors, it was found that the difference between the athlete and non-athlete in mental ability and scholastic achievement was small and of no statistical significance.

Smith and Eaton[3] investigated 279 athletes over a six year period at the University of Indiana. Probably the most significant fact revealed in the study was that athletes were very much like other average students as far as their scholastic success was concerned.

Beebee and Tuttle[4] studied 577 letter winners at the University of Iowa and concluded that scholastic attainments of letter winners were

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[1]Charles A. Maney, "Grades of College Football Students," School and Society, XXXVIII (1923), 307-08.

[2]John A. Cooper, "The Effect of Participation in Athletics upon Scholarship Measured by Achievement Tests," Pennsylvania State Studies in Education, No. 7, School of Education, Pennsylvania State College (1933), p. 9.

[3]Henry L. Smith and Merrill T. Eaton, "The Scholastic Achievement of Athletes at Indiana University," Bulletin of the School of Education, Indiana University, XVII (1941), 5-13.

[4]W. W. Tuttle and F. S. Beebee, "Study of the Scholastic Attainments of Letterwinners at the State University of Iowa," American Association of Health, Physical Education and Recreation Research Quarterly, XII (1941), 174-80.

approximately equal to the averages of the non-athletic group. The correlation between the ranks assigned by the placement scores and the grade-point averages was approximately .80.

The findings in these studies have revealed conclusions which are somewhat inconsistent and in many instances leave doubt concerning the statistical treatment of the data of the athletic and non-athletic groups. The general procedure used by many of these investigators was to compare large groups of athletes and non-athletes with little or no consideration given to controlling such important variables as age, college classification, or intellectual ability. The studies which were made by Savage, Maney, and Cooper indicated that the athlete was an inferior student academically; while the studies conducted by the University of Wisconsin and Ruble found the athlete a superior student academically. A third group of investigators, namely, Groves, Hindman, Hutchinson, Smith, Tuttle and Beebee reported that no academic differences existed between the two groups of students.

These studies have become somewhat outdated and no evidence could be found of any research between equated groups where several variables were controlled. This could very well be the reason why so many conflicting conclusions have been reached in the previous studies. An experimental study which involved equally matched groups should produce more reliable scientific results and simultaneously provide an excellent opportunity for further comparisons between athletes and non-athletes in other closely related areas.

Related Personality and Interest Studies

Few objective attempts have been made to measure the effects of participation in athletics upon the personalities and interests of the individuals involved. A review of the literature concerning the personality and interest patterns of athletes revealed that most of the studies could be classified into one of the following categories:

1. Studies primarily concerned with the effects of programs of physical education and athletics on the personal and social adjustment of the participants.[1]

2. Studies primarily concerned with the effects of physical education and athletic programs on the emotional aspects of the adjustment and behavior of the participants.[2]

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[1]T. B. Benson and John Summerskill, "Relation of Personal Success in Intercollegiate Athletics to Certain Aspects of Personal Adjustment," Research Quarterly, XXVI (1955), 8-14.

G. C. Carter and J. R. Shannon, "Adjustment and Personality Traits of Athletes and Non-Athletes," School Review, XLVIII (1940), 127-30.

William Fauquier, "The Attitudes of Aggressive and Submissive Boys toward Athletics," Child Development, XI (1940), 313-19.

Nelson S. Walke, Traits Characteristic of Men Majoring in Physical Education at the Pennsylvania State College (New York City: Bureau of Publications, Teachers College, Columbia University, 1937).

Dorothy Eaton and J. R. Shannon, "College Careers of High School Athletes and Non-Athletes," School Review, XLII (1934), 356-61.

[2]Warren R. Johnson, "A Study of Emotion Revealed in Two Types of Athletic Sports Contests," Research Quarterly, XX (1949), 72-78.

Warren R. Johnson and Daniel C. Hutton, "Effects of Combative Sport upon Personality Dynamics as Measured by a Projective Test," Research Quarterly, XXVI (1955), 338-46.

3. Studies primarily concerned with the relationship between physical ability, physical fitness, physical development, types of physical activity, and personality traits.[1]

There are two of these investigations which made use of the Minnesota Multiphasic Personality Inventory (MMPI) as the measuring instrument for obtaining personality data. Since the MMPI is also included in the battery of tests which are used in this study, some additional discussion concerning the conclusions made by La Place and Booth seem necessary.

La Place investigated a group of professional baseball players through the use of the Minnesota Multiphasic Personality Inventory (MMPI) and found the dominant trait in their personality pattern to be a strong

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Elvera Skubic, "Emotional Responses of Boys to Little League and Middle League Competitive Baseball," Research Quarterly, XXVI (1956), 338-46.

Burris F. Husman, "Aggression in Boxers and Wrestlers as Measured by Projective Techniques," Research Quarterly, XXVI (1955), 421-25.

[1]Warren R. Johnson and Daniel C. Hutton, "Personality Traits of Some Champion Athletes as Measured by Two Projective Tests: Rorschach and H-T-P," Research Quarterly, XXV (1954), 484-85.

Wesley Station and John A. Rutledge, "Measurable Traits of Personality and Incidence of Somatic Illness among College Students," Research Quarterly, XXVI (1949), 197-204.

John V. Thune, "Personality of Weightlifters," Research Quarterly, XX (1949), 296-306.

Charles Wenar, "Effects of a Motor Handicap on Personality," Child Development, XXVII (1956), 9-15.

E. G. Booth, Jr., "Personality Traits of Athletes," Research Quarterly, XXIX (1958), 127-38.

John P. La Place, "Personality and Its Relationship to Success in Professional Baseball," Research Quarterly, XXV (1954), 313-19.

"drive" which was expressed in the forms of ambitions, aggressions, and vigorous physical activities. The mean analysis of the clinical scales indicated that the drive was supplemented by an ability to exercise self-discipline and to adjust to occupations requiring initiative and social contact. Whether the personality of the college athlete has developed to the extent of the professional athlete needs further consideration.

Rather recently, Booth[1] made a study of the personality patterns of a group of athletes from Grinnell College. The Minnesota Multiphasic Personality Inventory was used to compare the personality ratings of three groups of college students: (1) freshman and upper-class athletes and non-athletes; (2) freshman and varsity athletes who participated in only team, individual, or team and individual sports; and (3) athletes who were rated as poor or good competitors.

On both the interest (MF) variable and the anxiety (A) variable, the non-athlete scored significantly higher than the athlete. Varsity athletes and the upper-class non-athletes scored significantly higher than the freshman athlete and non-athlete on the dominance (Do) variable. On the social responsibility (Re) variable, the upper-class non-athletes scored significantly higher than the freshman athletes and non-athletes and the varsity athletes.

Varsity athletes who participated in only individual sports scored significantly higher on the depression (D) variable than those who participated only in team sports. On the psychasthenia (Pf)

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[1] Booth, loc. cit.

variable, the participants in varsity individual sports scored significantly higher than the athletes who participated in both team and individual varsity sports.

Booth's study definitely determined that differences in personality do exist between athletes and non-athletes and that there was need for further study of this group of students through the use of the Minnesota Multiphasic Personality Inventory and other instruments which have been designed to measure significant traits in personality formation.

CHAPTER III

PROCEDURE OF THE STUDY

Subjects

Forty-six subjects were used in this study. They represented two equated groups which were matched by pairs on the basis of sex, chronological age, college classification, and intelligence scores.

The Athletic Group

Twenty-three of these forty-six subjects were male senior athletes who enrolled in the University of Oklahoma the fall of the school year 1955-56 and participated in intercollegiate athletics for three academic years. All attended the University of Oklahoma on full-athletic scholarships and none were transfer students from another educational institution. These twenty-three senior athletes represented the total number of subjects available for the athletic group after the established limitations for this study were taken into consideration.

This control group was composed of athletes from five different sports. Fourteen were football players, three were basketball players, three were wrestlers, two were trackmen, and one was a tennis player. These subjects represented the "athletic group" referred to in this study.

The Non-Athletic Group

Twenty-three male seniors were selected from a total of 1362 male students whose college classification and chronological age was comparable to that of the athletic group. From this group, an equal match was found for each of the twenty-three subjects in the athletic group. No transfer students were included and only those who had entered the University of Oklahoma in the fall of the school year 1955-56 were used in matching the non-athlete with the athlete student. When more than one match was possible, the first one that matched equally was selected. These students represented the "non-athletic" group referred to in this study. Together these two groups represented the twenty-three matched pairs of subjects used in this experiment.

Classification

The status of classification in college was determined from information derived from the University of Oklahoma's I. B. M. record cards and a close examination of the student's personal university record. Only those men who were seniors and non-transfer students were used.

Chronological Age

The chronological age was equated between the athletic and non-athletic group. For the athletic group the chronological age ranged from 255 to 269 months, with a mean chronological age of 262.39 and a standard deviation of 3.96 months. For the non-athletic group the chronological age ranged from 256 to 271 months, with a mean chronological age of 262.04 and a standard deviation of 6.29 months. The mean chronological ages for the athletic and non-athletic groups are shown

in Table 1.

TABLE 1

THE MEAN CHRONOLOGICAL AGES FOR
THE TWO EXPERIMENTAL GROUPS

Groups	C. A.	S. D.
Athletes	262.39	3.96
Non-Athletes	262.04	6.29

Intelligence

The intellectual ability of the two groups was controlled by using the results of the freshman placement tests which were administered to each new student who entered the University of Oklahoma. They were the Ohio State Psychological Examination (OSPE) and the Iowa High-School Content Examination (IHSC). While the O. S. P. E. was designed to measure academic aptitude, the I. H. S. C. was designed to measure the student's retention of knowledge from courses in English, Mathematics, Science and History which were taken in high school. The results of both these tests were in terms of decile scores. Therefore, one was the lowest score; nine and zero represented the highest score obtainable.

All of the forty-six subjects selected for the study fell within a range from the first to the fifth decile on the Ohio State Psychological Examination with a mean decile score of 2.30 and a standard deviation of 1.31. The range of scores on the Iowa High School Content Examination was from the first to the ninth decile with a mean decile score of 3.70 and a standard deviation of 2.30. The means and standard deviations for

both tests are shown in Table 2.

TABLE 2

THE MEAN O. S. P. E. AND I. H. S. C. DECILE SCORES FOR THE TWO EXPERIMENTAL GROUPS

Groups	O. S. P. E.	S. D.	I. H. S. C.	S. D.
Athletic	2.30	1.31	3.70	2.30
Non-Athletic	2.30	1.31	3.70	2.30

By the standards of the Ohio College Association these two groups contained an unusually high number of low decile students and a correspondingly low number of high decile students. On the surface this indicated a curtailed distribution when compared to the general norms of the O. S. P. E. However, it must be remembered that this represented the distribution of the O. S. P. E. scores as controlled by the athletic group at the University of Oklahoma and symmetry in a small experimental group of this nature was not necessary for these scores to be representative of the athletic group. It was interesting that these findings concerning the athletic group were similar to those which were obtained from a study made of the entire 1952 freshman class at the University of Oklahoma.[1]

[1] A Longitudinal Predictive and Descriptive Study of the Freshman Class of 1952, "First Semester Grades and Test Scores of 348 Successful Students," Issue IX (University of Oklahoma Guidance Service), p. 11c.

Major Fields of Study

Although it was an impossibility to control the major fields of study, a brief resume is presented for informational purposes. The athletic group was composed of nine Business majors, nine Education majors, four Arts and Science majors, and one Engineering major. The total number of Physical Education majors included in this athletic group was one student; therefore, the educational objectives of the group were evenly distributed and represented several unrelated fields of study.

In comparison to the athletic group, the non-athletic group had eleven Business majors, one Education major, two Arts and Science majors, seven Engineering majors, and two Pharmacy majors. The two groups contained an exceptionally large number of Business and Education majors, but the non-athletic group did have more students who were interested in obtaining a technical education than did the athletic group. In general, the two groups represented an average cross-section of study.

Instruments of Measurement

A battery of four tests were used to gather personality and interest data from the athletic and non-athletic groups. These four tests were:

1. Allport-Vernon Study of Values
2. Guilford-Zimmerman Temperament Survey
3. Minnesota Multiphasic Personality Inventory
4. Strong's Vocational Interest Blank for Men

Allport-Vernon Study of Values

The first test, Study of Values, was a scale which was designed to measure the dominant interests of personality. There were forty-five items which were used to measure six value dimensions, namely, Theoretical, Economic, Aesthetic, Social, Political, and Religious. The test-retest reliabilities ranged from .70 to .90 with the exception of one score, the "social," which was reported by numerous investigators as being of doubtful meaning and stability.[1] Validity and correlations with other tests were satisfactory as the test has proven itself very useful in the area of personality measurements.

Guilford-Zimmerman Temperament Survey

The second test, Guilford-Zimmerman Temperament Survey, consisted of 300 items, thirty for each of the ten major traits which are responded to with a yes, ?, or no. The ten traits were: (G) general activity, (R) restraint, (A) ascendence, (S) sociability, (E) emotional stability, (O) objectivity, (F) friendliness, (T) thoughtfulness, (P) personal relations, and (M) masculinity. The reliabilities ranged from .75 to .87 on all ten traits.[2] The internal validity or factorial validity of the scores was fairly well assured by the foundation of factor-analysis studies plus the successive item-analysis directed toward internal consistency and uniqueness.[3] Some of the most impressive validity data have

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[1] O. K. Buros, The Third Mental Measurements Yearbook (New Brunswick: Rutger's University Press, 1949), p. 99.

[2] J. P. Guilford and W. S. Zimmerman, The Guilford-Zimmerman Temperament Survey Test Manual (Beverly Hills: Sheridan Supply Company, 1949), p. 6.

[3] J. P. Guilford, "New Standards for Test Evaluation," Educational and Psychological Measurement, VI (1946), 427-38.

come from the use of the inventories with supervisory and administrative personnel and in the areas of counseling and guidance at the upper high school and college levels.

Minnesota Multiphasic Personality Inventory

The third test, Minnesota Multiphasic Personality Inventory, consisted of 566 statements to which the subjects were exposed and required to determine if they were true or false. Different areas of life experiences were covered by the items and scoring scales have been constructed for the following personality trends or structures: Hypochondriosis, Depression, Hysteria, Psychopathic Deviate, Masculine-Feminine Interests, Paranoia, Psychasthenia, Schizophrenia, and Hypomania. As an inventory-type test, it has an advantage over other inventories in that it attempts to measure the validity of the test for the particular individual with four different measures. One of these was the question score, which was dependent upon the number of items categorized as questionable by the subject. The second was the lie score which attempts to measure falsification. The third, the validity score, tends to show whether the subject was taking the test seriously and honestly giving his opinions or not; and the fourth, the K scale, acted as a suppressor variable and is claimed to sharpen the discriminatory power of the diagnostic scales.

The test-retest reliabilities so far developed ranged between .71 and .83.[1] The number of cases for validation and cross-validation of some of the specific scales is still somewhat small. In this respect,

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[1]S. R. Hathaway and J. C. McKinley, The Minnesota Multiphasic Personality Inventory Test Manual (New York: The Psychological Corporation, 1943), p. 3.

it should be kept in mind that the inventory measures common specific clinical syndrones, in contrast to other inventories designed to measure neuroticism or special states like inferiority. This test is to help identify disturbed persons and in this respect is more valuable than most inventories.

Strong Vocational Interest Blank

The fourth test used, Strong's Vocational Interest Blank for Men, consisted of 400 items to which the subject responded by indicating whether he likes, dislikes, or is indifferent to each of the items. The test was based upon considerable research on the measurement of interests and is one of the most outstanding inventories of its type. It is a measure of one's interests interpreted in terms of occupations. It is not a measure of specific or general abilities, including intelligence. To provide for guidance into broad fields of occupational endeavor, several group scales have been prepared. They were: Group I, Arts-Science-Technologists; Group II, Physical Science; Group IV, Math-Science Teacher and Trades Group; Group V, Social Service Group; Group VIII, Office Detail Workers; Group IX, Persuasive Group; and Group X, Verbal Group. Raw scores may be interpreted in terms of the ratings of A, B+, B, B-, C+, and C or may be converted into standard scores for statistical purposes. The rating A means that the individual has the interests of persons successfully engaged in that occupation; the rating of C means that the person does not have such interests; and the rating of B means that the person probably has those interests but not as strong as those with A ratings. In general a person should consider seriously those occupations in which he receives A or B+ ratings before entering some

other occupation. Conversely, a person should scrutinize with care any occupation in which he receives a C rating before accepting it as a final choice.

The average coefficient of reliability was .877, as based on the records of 285 Stanford seniors. The test-retest reliability was .869 for a one-week interval and .84 with an interval of five years.[1] The data clearly demonstrated that the test has high validity in differentiating adult occupations as well as having significant predictive value. Generally speaking, this is why this test is considered outstanding in the area of Vocational Guidance.

The Experimental Task

The individual academic record of each subject in the study was carefully examined to determine two things: (1) the total number of course credit hours that each student had accumulated during six semesters of college, and (2) the total number of grade points that had been made in each course-credit hour.

The next task was the administration of the battery of tests to the twenty-three matched pairs of athletes and non-athletes. Both groups were given the tests under the direct supervision of the writer. The directions found in each test manual were followed at all times. The Minnesota Multiphasic Personality Inventory was administered first with the following instructions:

> This inventory consists of numbered statements. Read each statement and decide whether it is true as applied to you or false as applied to you.

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[1]E. K. Strong, The Vocational Interest Blank for Men Test Manual (Stanford, California: Stanford University Press, 1945), p. 14.

You are to mark your answers on the answer sheet you have. Look at the example of the answer sheet shown at the right. If a statement is TRUE or MOSTLY TRUE, as applied to you, blacken between the lines in the column headed T. If a statement is FALSE or NOT USUALLY TRUE, as applied to you, blacken between the lines in the column headed F. If a statement does not apply to you or if it is something that you don't know about, make no mark on the answer sheet.

Remember to give YOUR OWN opinion of yourself. Do not leave any blank spaces if you can avoid it.

In marking your answers on the answer sheet, be sure that the number of the statement agrees with the number on the answer sheet. Make your marks heavy and black. Erase completely any answer you wish to change. Do not make any marks on this booklet. Do you understand the instructions?

Remember, try to make some answer to every statement.
NOW OPEN THE BOOKLET AND GO AHEAD.[1]

After the completion of the MMPI, the Strong Vocational Interest Blank was given with the following instructions:

It is possible with a fair degree of accuracy to determine by this test whether one would like certain occupations or not. This test is not one of intelligence or school work. It measures the extent to which one's interests agree or disagree with those of successful men in a given occupation.

Your responses will, of course, be held strictly confidential.

Indicate after each occupation listed below whether you would like that kind of work or not. Disregard considerations of salary, social standing, future advancement, etc. Consider only whether or not you would like to do what is involved in the occupation. You are not asked if you would take up the occupation permanently, but merely whether or not you would enjoy that kind of work, regardless of any necessary skills, abilities, or training which you may or may not possess.

Black in the L if you like that kind of work.

Black in the I if you are indifferent to that kind of work.

Black in the D if you dislike that kind of work.

Work rapidly. Your first impressions are desired here. Answer all items. Many of the seemingly trivial and irrelevant items are very useful in diagnosing your real attitude.[2]

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[1]S. R. Hathaway and J. C. McKinley, The Minnesota Multiphasic Personality Inventory Test Booklet (New York: The Psychological Corporation, 1943), p. 1.

[2]E. K. Strong, Jr., Vocational Interest Blank for Men Test Booklet (Stanford, California: Stanford University Press, 1938), pp. 1-2.

After the completion of the Strong Vocational Interest Blank, the Guilford-Zimmerman Temperament Survey was given with the following instructions:

> In this booklet you will find a number of statements. Read each statement carefully. If the statement seems true, or if you agree with it, mark answer "Yes" on your answer sheet. If the statement is more false than true, or if you disagree with it, mark "No." If you cannot decide between "Yes" and "No," you may mark answer "?" BUT AVOID DOING THIS IF POSSIBLE.
>
> Be sure to answer every item.
>
> There are no "right" or "wrong" answers in the usual sense of a high score being necessarily the best. The purpose of this Survey will be served best if you describe yourself and state your opinions as accurately as possible.
>
> You may notice that many items are similar. Actually, no two items are exactly alike.
>
> Notice that the numbering of items on the answer sheet follows across the rows rather than down the columns. Do you understand the instructions?
>
> You may turn the page and begin with the items now.[1]

The Allport-Vernon Study of Values was then given to the subjects with these instructions:

> A number of controversial statements or questions with two alternative answers are given. Indicate your personal preferences by writing appropriate figures in the boxes to the right of each question. Some of the alternatives may appear equally attractive or unattractive to you. Nevertheless, please attempt to choose the alternative that is relatively more acceptable to you. For each question you have three points that you may distribute in any of the following combinations.
>
> If you agree with alternative (a) and disagree with (b), write 3 in the first box and 0 in the second box.
>
> If you agree with (b) and disagree with (a), write 0 in the first box and 3 in the second box.
>
> If you have a slight preference for (a) over (b), write 2 in the first box and 1 in the second box.
>
> If you have a slight preference for (b) over (a), write 1 in the first box and 2 in the second box.
>
> Do not write any combination of numbers except one of these four. There is no time limit, but do not linger over any one question or statement, and do not leave out any of the questions unless you

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[1] J. P. Guilford and W. S. Zimmerman, The Guilford-Zimmerman Temperament Survey Test Booklet (Beverly Hills: Sheridan Supply Company, 1949), p. 1.

find it really impossible to make a decision.

Do you understand the instructions? You may turn the page and begin.[1]

Treatment of the Data

The academic achievement of each subject in this study was measured in terms of grade-point averages for the first six semesters which represented the three years when all subjects attended the University of Oklahoma.

The customary method of computing grade points at the University of Oklahoma was to award each A, four points; each B, three points; each C, two points; each D, one point; and each F, zero points for each course-credit hour obtained by the student.

In determining grade-point averages for any given semester, each subject's course-credit hours were multiplied by the number of grade points for the grade earned in each course, and the sum thus derived was divided by the total number of hours of course credit carried during the semester. For example, assume that an individual carried five courses with credits as shown in the diagram below. The grade-point average was

Course Number	Hours Credit Per Course	Course Grade	Points Per Hour	Points Per Course
1	2	C	2	4
2	3	B	3	9
3	5	C	2	10
4	3	F	0	0
5	2	D	1	2
Total --	15	--	--	25

[1]G. W. Allport and P. E. Vernon, Study of Values Test Booklet (Boston: Houghton Mifflin Company, 1951), p. 1.

derived by dividing the total number of grade points by the total number of course-credit hours. Thus,

$$G.\ P.\ A. = 25/15 = 1.67$$

The grade-point average for each group was determined by totaling the individual grade-point averages and dividing the sum by the total number of subjects in each group.

After the grade-point averages and the total number of course-credit hours had been determined, the battery of personality and interest tests were scored for each subject in the two groups. Each trait on the three personality tests required a mean trait score to be computed for the athletic and non-athletic groups. Thus, the Study of Values test had six mean traits per group; the Guilford-Zimmerman Temperament Survey had ten mean traits per group; and the Minnesota Multiphasic Personality Inventory had ten mean traits per group. The Strong Vocational Interest Blank scores were converted to standard scores in order to eliminate all the negative numbers and a mean score was computed for each Group scale for the athletic and non-athletic group.

The subjects in this study had been matched by previous performance on the Ohio State Psychological Examination and the Iowa High School Content Examination and therefore represented correlated data. To test the significance of this correlated data, it was necessary to select a statistic which was appropriate for this particular type of data. The statistic selected was the t-test designed to establish the reliability of the difference between correlated means. To assure maximum reliability the "difference method" was used and the necessary degrees of

freedom were considered to compensate for the small number involved in the two groups. This procedure was in accordance with the preferred small group method as stated by Garrett,[1] Walker and Lev.[2]

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[1]Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1954), p. 227.

[2]Helen M. Walker and Joseph Lev, Statistical Inference (New York: Henry Holt and Company, 1953), p. 152.

CHAPTER IV

ANALYSIS OF THE DATA

A total of thirty-five comparisons were made by testing the six null hypotheses that no significant differences existed between the athletic and non-athletic groups in the areas of academic achievement, vocational interest, and personality structure. For this study the required level of statistical significance was set at .05.[1]

Academic Achievement

The first hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups in grade-point averages. In Table 3, the mean difference was

TABLE 3

t-test OF THE MEAN DIFFERENCE IN GRADE-POINT AVERAGES BETWEEN THE ATHLETIC AND NON-ATHLETIC GROUPS

Groups	Mean Difference	S. D. Difference	S. E. M. Difference	t*
Athletic Non-Athletic	.034	.49	.10	.34

*t for P of .05 = 2.02; df = 44.

[1]Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1954), p. 216.

compared and treated statistically by use of the correlated t-test. For the athletic group the range was from 1.86 to 2.93 with a mean grade-point average of 2.25 and a standard deviation of .28. The range for the non-athletic group was from 1.73 to 2.91 with a mean grade-point average of 2.28 and a standard deviation of .35. Since the results in Table 3 showed the mean difference to be .034 between the two groups, no statistically significant difference was found in the grade-point averages for the six semesters of college work from 1955-58. Therefore, the first hypothesis was sustained.

Further analysis of the data presented an accurate illustration of the grade-point averages for the athletic and non-athletic groups for each semester. The profile in Figure 1 revealed some interesting patterns

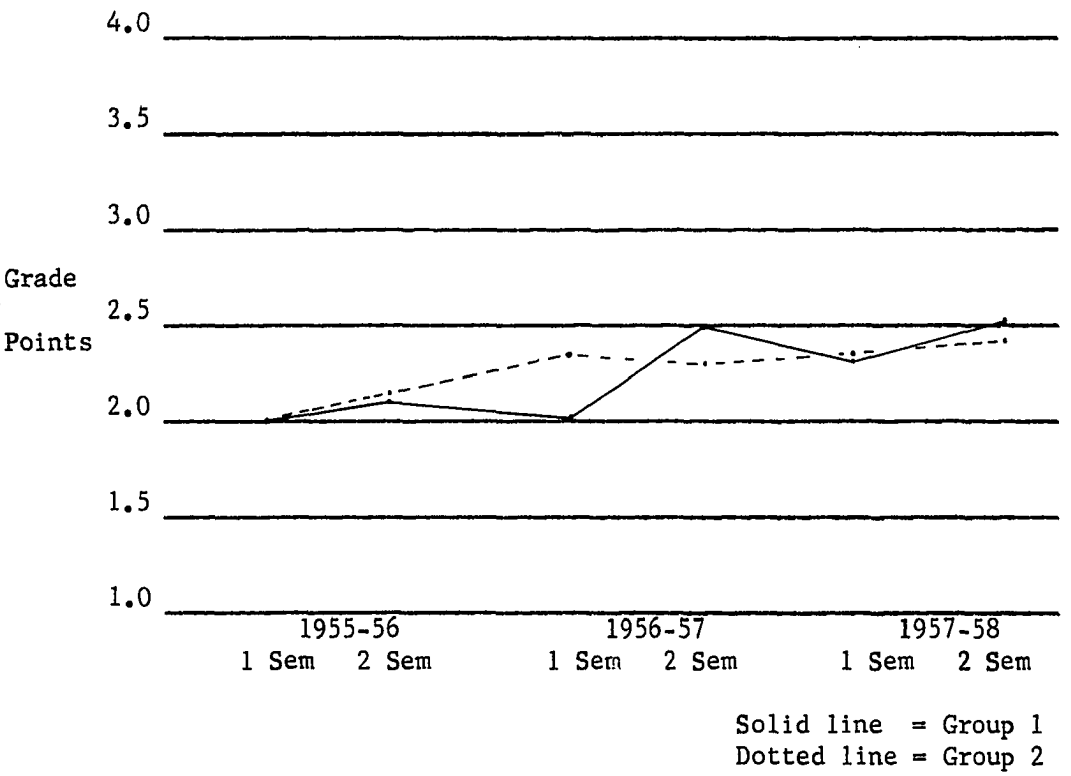

Figure 1. The Mean Grade-Point Averages for the Athletic and Non-Athletic Groups for Six Semesters.

concerning the grade-point averages for each semester. The non-athletic group, Group 2, showed a gradual increase from the first through the sixth semester except for the fourth semester when a slight decrease was noted. The athletic group, Group 1, showed an increase in grade-point averages for the second, fourth, and sixth semesters, and a decrease in grade-point averages for the first, third, and fifth semesters. This indicated that the athletes have a tendency to make higher grades while not participating in intercollegiate athletics as all but one of the athletic group participated in those activities which were played during the first semester of each school year. Nevertheless, no significant differences were found between the two groups in total grade-point average.

The second hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups in the total number of course-credit hours during the six semesters of college work from 1955-58. The results in Table 4 showed a mean

TABLE 4

t-test OF THE MEAN DIFFERENCE IN TOTAL COURSE-CREDIT HOURS BETWEEN THE ATHLETIC AND NON-ATHLETIC GROUPS

Groups	Mean Difference	S. D. Difference	S. E. M. Difference	t*
Athletic Non-Athletic	3.52	8.18	1.70	2.07**

*t for P of .05 = 2.02; df = 44.

**Significant at or beyond 5 per cent level of confidence.

difference of 3.52 hours between the two groups which revealed a statistically significant difference at the .05 level in favor of the non-athletic group.

The range of course-credit hours for the non-athletic group was from 83 to 109 with a mean of 95.12 and a standard deviation of 7.19 hours. For the athletic group the range of course-credit hours was from 80 to 103 with a mean of 91.60 and a standard deviation of 4.32 hours. Thus, since a significant difference was found between the two groups, the second hypothesis was rejected.

The average number of course-credit hours earned each school semester by the athletic and non-athletic groups were shown in Figure 2.

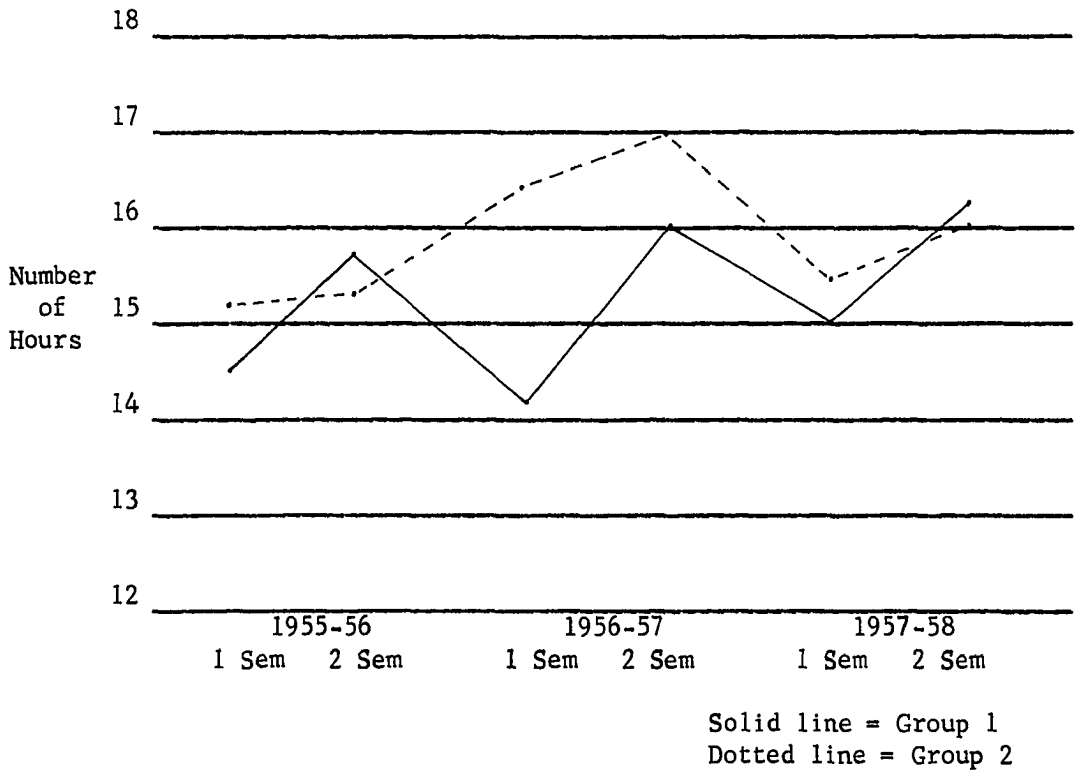

Figure 2. The Mean Course-Credit Hour Profile for the Athletic and Non-Athletic Groups for Six Semesters.

The profile of the non-athletic group, Group 2, revealed a gradual increase for the first four semesters in the total number of course-credit hours earned and then a fairly sharp decrease for the fifth semester. The sixth semester showed a very slight increase over the fifth semester. This indicated that the non-athlete earned more course-credit hours during the first three years.

The profile of course-credit hours for the athletic group, Group 1, was somewhat different from that of the non-athletic group. Instead of a gradual increase in the total number of course-credit hours earned each semester, the athletic group had a tendency to enroll in a larger number of hours the second semester of each school year, and a lesser number of hours during the first semester. This same pattern was noted in the grade-point averages in Figure 1 and indicated that the athletic group made better grades and earned more course-credit hours during those semesters when there were no intercollegiate athletics scheduled. Since no significant difference was found between the grade-point averages of the two groups, it seemed the only disadvantage to participating in intercollegiate athletics was the difficulty in obtaining a sufficient number of course-credit hours to graduate in four years of college.

Allport-Vernon Study of Values

The third hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups on their responses to the Allport-Vernon Study of Values. The mean differences were determined for each of the six values on the test and treated statistically by use of the correlated t-test. These results were shown in Table 5.

TABLE 5

t-test OF THE MEAN DIFFERENCES OF 23 ATHLETES AND 23 NON-ATHLETES ON THE ALLPORT-VERNON STUDY OF VALUES

Athletic Non-Athletic Group Traits	Mean Difference	S. D. Difference	S. E. Difference	t*
Theoretical	4.78	8.75	1.82	2.63**
Economic	-1.26	11.08	2.31	.55
Aesthetic	2.91	12.88	2.68	1.09
Social	-1.70	10.53	2.19	.78
Political	-1.39	9.46	1.97	.71
Religious	-3.17	10.41	2.17	1.46

*t for P of .05 = 2.02; df = 44.

**Significant at .05 level of confidence.

In the test of the third hypothesis, a statistically significant difference was found between the two groups on the Theoretical Value of the test. Insignificant statistical differences were found on the Social, Political, Economic, Aesthetic, and Religious Values. Therefore, the null hypothesis was sustained on these five values of the test and rejected on the one value, Theoretical, due to the significant difference which existed.

So that comparisons could be made between the averages of the athletic and non-athletic groups in illustrated form, the mean scores for each of the six values were determined. According to the general norms for the Allport-Vernon Study of Values test, a score of forty represented the average score while one probable error was approximately

a plus or minus six from the mean score. These scores were shown in Figure 3. Group 1 represented the athletes; Group 2, the non-athletes.

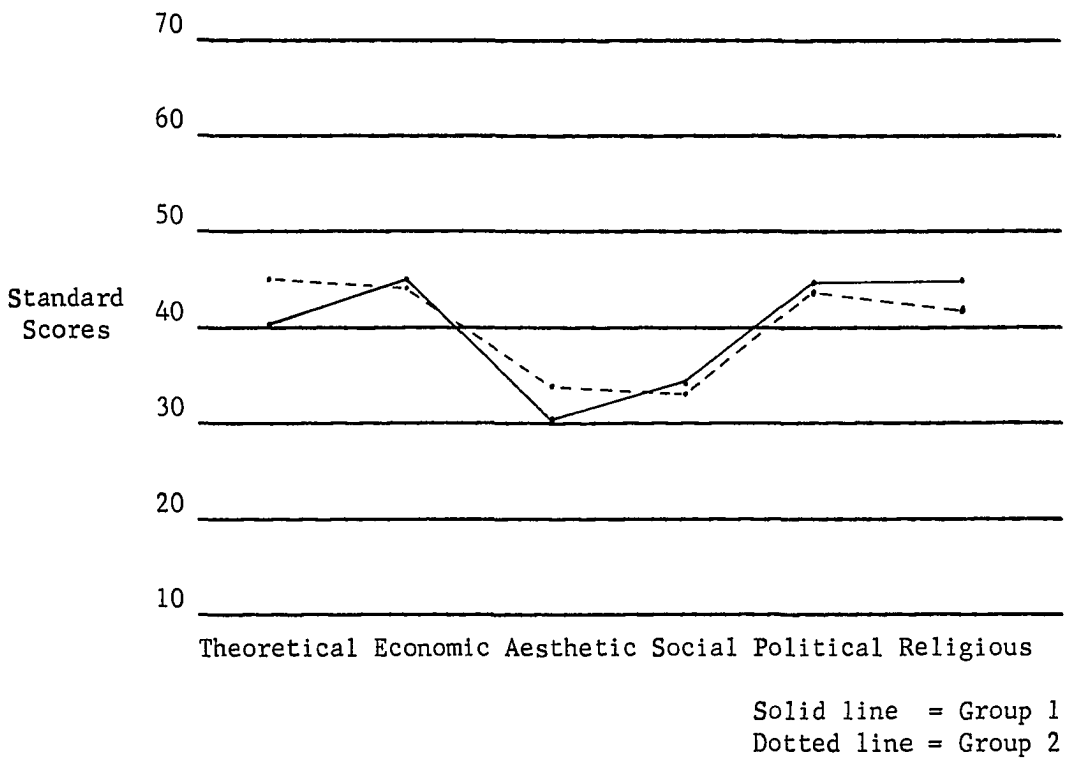

Figure 3. The Mean Personality Scores for the Athletic and Non-Athletic Groups on the Allport-Vernon Study of Values.

The profile for both the athletic and non-athletic groups showed an average normal response on the Theoretical, Economic, Political, and Religious values. However, on both the Aesthetic and Social values, the two groups scored outside the range of one probable error when compared with the general norms of the test itself. It was noted that the significant difference which was found on the Theoretical value was made by the non-athletes in Group 2. This indicated that the non-athletic group was more interested in the discovery of the truth, and rather than make judgements regarding the beauty or utility of objects, sought only to

observe and to reason. The interests of the group appeared empirical, critical, and rational in an effort to systematize knowledge. Although the t-test produced an insignificant difference on the Religious value, a trend was noted which favored the athletic group.

So that an examination might be made of the individual performances of each subject in the two experimental groups, the total number and percentage of subjects in each group who scored one probable error above or below the mean score of forty was given in Table 6.

TABLE 6

THE NUMBER AND PERCENTAGE OF SIGNIFICANT INDIVIDUAL RESPONSES AS COMPARED TO THE ALLPORT-VERNON STUDY OF VALUES GENERAL TEST NORMS

Allport-Vernon Study of Values		Athletes		Non-Athletes	
		Number	Per cent	Number	Per cent
(Corrected Scores)	N = 46				
Theoretical	above 1 P.E.	4	17.39	9	39.13
	below 1 P.E.	4	17.39	1	4.35
Economic	above 1 P.E.	10	43.44	9	39.13
	below 1 P.E.	2	8.70	2	8.70
Aesthetic	above 1 P.E.	0	.00	4	17.39
	below 1 P.E.	17	73.91	14	60.87
Social	above 1 P.E.	2	8.70	1	4.35
	below 1 P.E.	12	52.17	15	65.22
Political	above 1 P.E.	11	47.83	9	39.13
	below 1 P.E.	1	4.35	0	.00
Religious	above 1 P.E.	8	34.78	5	21.74
	below 1 P.E.	1	4.35	4	17.39

The individual data revealed that a very high number of subjects in both the athletic and non-athletic groups scored below the average on the Aesthetic and Social values as was pointed out in the profile analysis. On the Social value, 12 (52.17 per cent) athletes and 15 (65.22 per cent) non-athletes scored below one probable error which indicated those individuals did not place value on the altruistic or philanthropic aspects of life. An examination of the data concerning the Aesthetic value showed 17 (73.91 per cent) athletes and 14 (60.87 per cent) non-athletes who placed little value on things of cultural beauty, grace, symmetry, or harmony. This indicated a lack of appreciation for those things which many people regard as the finer things in life.

Perhaps those values which best described the athletic group in this study were Political, Economic, and Religious. On the Political value, 11 (47.83 per cent) athletes valued things which indicated power, leadership, influence, and renown. On the Economic value, 10 (43.44 per cent) athletes valued those things which were most practical and useful. The third value had 8 (34.78 per cent) athletes who valued those qualities which were spiritual and religious in nature.

The non-athletic group also scored high on the Political and Economic values. On the Theoretical value, where the statistically significant difference between groups was found, 9 (39.13 per cent) non-athletes placed values on critical and rational aspects of thinking as opposed to the 4 (17.39 per cent) athletes who scored high on this value.

In general, the Study of Values test indicated that both the athletes and non-athletes had a tendency to value those things which represented leadership, power, practicalness, and usefulness. While

the athletic group seemed to be more religious in their thinking, the non-athletic group seemed to be more interested in the discovery of the truth. Except for the statistically significant difference which was found on the Theoretical value, the two groups appeared to be very similar.

The Guilford-Zimmerman Temperament Survey

The fourth hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups on their responses to the Guilford-Zimmerman Temperament Survey. A mean difference was determined for each of the ten personality traits and then treated statistically by the correlated t-test. The results of these tests which were made between these mean differences on each of the personality traits--General Activity, Restraint, Ascendence, Sociability, Emotional Stability, Objectivity, Friendliness, Thoughtfulness, Personal Relations, and Masculinity--were shown in Table 7.

The results revealed that no statistically significant differences existed between the athletic and non-athletic groups on the Guilford-Zimmerman Temperament Survey. The two largest differences found between the two groups was on the Ascendence Scale which favored the non-athletic group and on the Personal Relations which favored the athletic group. Although these two scales did approach statistical significance, all ten personality traits revealed insignificant statistical differences. Therefore, the fourth hypothesis was sustained.

TABLE 7

t-test OF THE MEAN DIFFERENCES OF 23 ATHLETES AND 23 NON-ATHLETES ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Athletic Non-Athletic Group Traits	Mean Difference	S. D. Difference	S. E. M. Difference	t*
General Activity	-.61	7.99	1.66	.37
Restraint	-.48	6.30	1.31	.37
Ascendence	1.91	6.59	1.37	1.39
Sociability	1.26	7.45	1.55	.81
Emotional Stability	-1.45	8.38	1.75	.83
Objectivity	-1.52	7.74	1.61	.94
Friendliness	.04	7.83	1.63	.02
Thoughtfulness	1.48	8.56	1.78	.83
Personal Relations	-3.30	8.72	1.82	1.81
Masculinity	-.22	6.62	1.38	.16

*t for P. of .05 = 2.02; df = 44.

So that comparisons might be illustrated in profile form between the two experimental groups, the mean raw scores on each of the ten personality traits were converted to T scores and were shown in Figure 4.

On the Guilford-Zimmerman Temperament Survey, only those T scores which were less than forty-three or greater than fifty-seven represented abnormal personality patterns as governed by the general norms of the test. The group data profiles revealed that the scores on all ten personality traits for the athletic and non-athletic groups were within the normal range of behavior. However, one difference was noted which

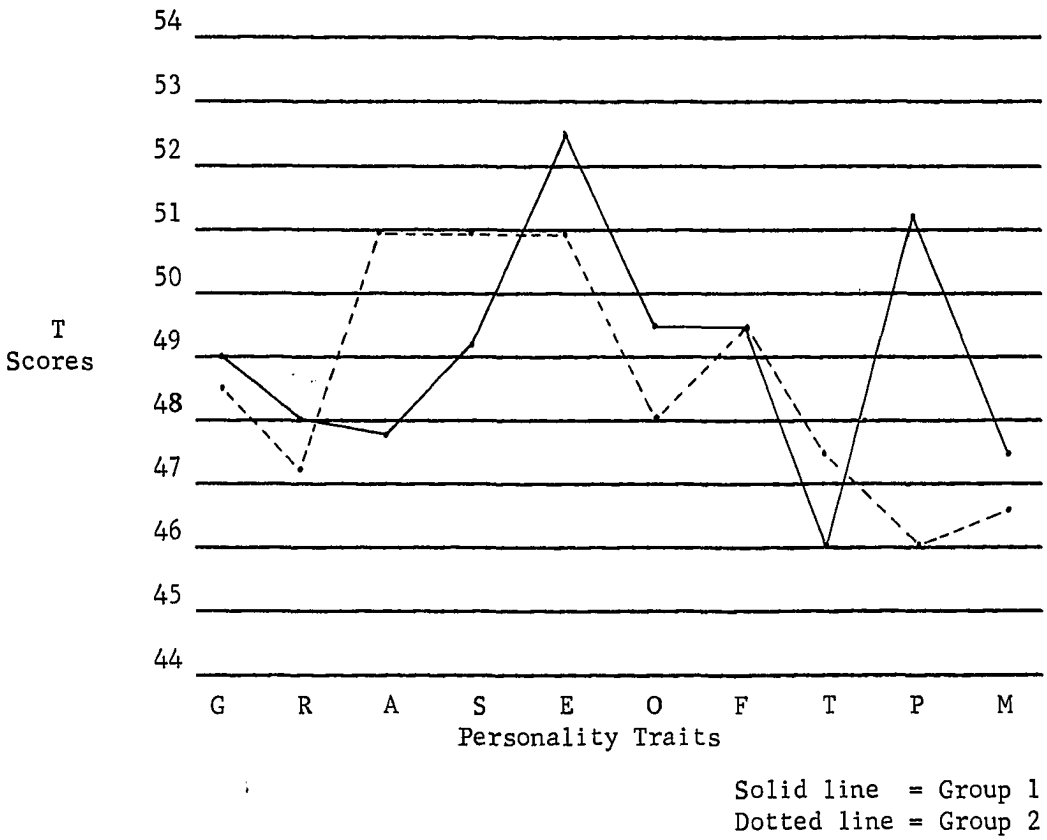

Figure 4. The Mean Personality Trait Scores of the Athletic and Non-Athletic Groups on the Guilford-Zimmerman Temperament Survey.

approached statistical significance on the Personal Relations scale. Since the difference favored the athletic group, this indicated an ability to get along well with other people. On the Ascendence Scale the athletic group appeared to be more submissive than the non-athletic group. These findings could have resulted from the relationships which existed between the players and coaches on and off the playing fields.

Since it was difficult to identify each individual's performance by comparisons of the group means, the number and percentage of subjects in each group who scored above the seventy-fifth and below the twenty-fifth percentiles were considered. The percentages revealed that very

small differences existed between the two experimental groups and substantiated the test of the null hypothesis. However, this individual analysis revealed some personality patterns which were interesting to note. The results of the individual responses and comparisons were shown in Table 8.

TABLE 8

THE NUMBER AND PERCENTAGE OF SIGNIFICANT INDIVIDUAL RESPONSES AS COMPARED TO THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY GENERAL TEST NORMS

Guilford-Zimmerman Temperament Survey		Athletes		Non-Athletes	
		N	Per cent	N	Per cent
(Raw Scores)	N = 46				
G Energy	above 75%tile	6	26.09	7	30.43
G Slowness	below 25%tile	5	21.74	5	21.74
R Seriousness	above 75%tile	3	13.04	4	17.39
R Impulsiveness	below 25%tile	6	26.09	7	30.43
A Ascendence	above 75%tile	2	8.70	6	26.09
A Submissiveness	below 25%tile	7	30.43	4	17.39
S Sociability	above 75%tile	4	17.39	8	34.78
S Seclusiveness	below 25%tile	3	13.04	5	21.74
E Emotional Stability	above 75%tile	6	26.09	8	34.78
E Depression	below 25%tile	2	8.70	4	17.39
O Objectivity	above 75%tile	4	17.39	6	26.09
O Hypersensitiveness	below 25%tile	3	13.04	8	34.78
F Agreeableness	above 75%tile	4	17.39	7	30.43
F Belligerance	below 25%tile	4	17.39	7	30.43
T Thoughtfulness	above 75%tile	2	8.70	5	21.74
T Unreflectiveness	below 25%tile	7	30.43	8	34.74
P Personal Relations	above 75%tile	4	17.39	4	17.39
P Criticalness	below 25%tile	3	13.04	8	34.74
M Masculinity	above 75%tile	6	26.09	4	17.39
M Femininity	below 25%tile	7	30.43	8	34.74

The personal characteristics which perhaps best described both the athlete and non-athlete in this study as a result of the Guilford-Zimmerman Temperament Survey were: energetic, impulsive, sociable, emotionally stable, unreflective, and feminine. Femininity referred to those attitudes which related to the symbolic and personalized objects in an individual's environment which required preciseness, resourcefulness, and efficiency. In addition to these traits, the athletic group appeared to get along better with people, was more submissive and objective; while the non-athletic group appeared to be hypersensitive, critical, and more outspoken.

The Minnesota Multiphasic Personality Inventory

The fifth hypothesis tested the athletic and non-athletic groups on their responses to the Minnesota Multiphasic Personality Inventory. The mean differences were determined and tested for significant differences on each of the ten personality traits--Hypochrondriasis, Depression, Hysteria, Interest, Paranoia, Psychasthenia, Schizophrenia, Hypomania, Psychopathic, and Social Introversion. The results of these t-tests were shown in Table 9.

It was noted that a statistically significant difference was found between the two experimental groups on the Psychopathic Scale while the other nine scales revealed statistically insignificant differences. Therefore, the fifth hypothesis was sustained on these nine scales which revealed no difference and was rejected on the Psychopathic Scale of the Minnesota Multiphasic Personality Inventory.

TABLE 9

t-test OF THE MEAN DIFFERENCES OF 23 ATHLETES AND 23 NON-ATHLETES ON THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

Athletic Non-Athletic Group Traits	Mean Difference	S. D. Difference	S. E. Difference	t*
Hypochondriasis	.35	5.56	1.16	.30
Depression	.78	6.64	1.38	.57
Hysteria	1.26	5.22	1.09	1.16
Psychopathic	-1.48	3.27	.68	2.18**
Interest	1.57	7.12	1.48	1.06
Paranoia	.35	3.74	.78	.45
Psychasthenia	-2.35	6.50	1.35	1.74
Schizophrenia	-2.78	7.31	1.52	1.83
Hypomonia	2.17	5.98	1.25	1.74
Social Introversion	-1.09	9.94	2.07	.53

*t for P. of .05 = 2.02; df = 44.

**Significant at .05 level of confidence.

Before a comparison of the mean responses could be made between the two experimental groups, it was necessary to convert the raw scores into T-scores. These mean comparisons were shown in Figure 5.

In interpreting the scores on the profile only those T scores which were greater than seventy and less than thirty indicated abnormal behavior. An examination of the profile for Group 1, the athletic group, and Group 2, the non-athletic group, revealed that all scores were well within the range which was considered as normal behavior and did not

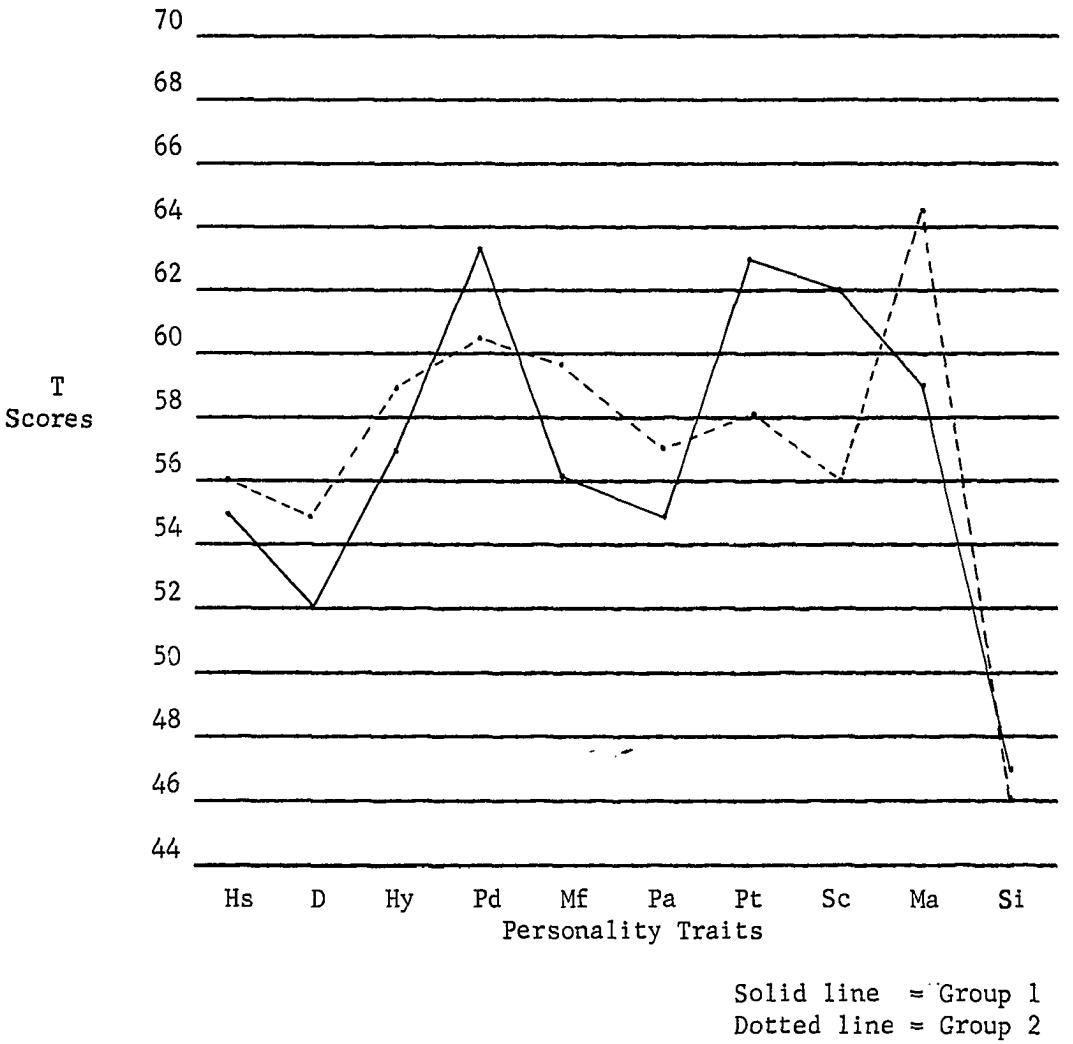

Figure 5. The Mean Personality Scores of the Athletic and Non-Athletic Groups on the Minnesota Multiphasic Personality Inventory.

reveal any abnormal behavior patterns for either group. Therefore, the statistically significant difference which was found on the Psychopathic Scale in favor of the athletic group indicated that the non-athletic group had deeper emotional responses, profited more from experiences, and regarded social mores more than the athletic group. This did not represent Psychopathic behavior in the more serious forms which referred to lying, stealing, alcohol or drug addiction, or sexual immorality.

Although there were no statistically significant differences found on the Psychasthenia, Schizophrenia, and Hypomania Scales, trends were noted which deserved further discussion. It was noted that the differences on the Psychasthenia and Schizophrenia Scales favored Group 1 while the difference which was found on the Hypomania Scale favored Group 2. Since a psychasthenic tendency may be manifested merely in a mild depression, excessive worry, lack of confidence, or the inability to concentrate, this suggested that the athletic group tended to possess more of these traits than did the non-athletic group. The schizophrenic tendency indicated that the athletic group also seemed to be characterized by bizarre and unusual thoughts and behavior patterns to a greater degree than the non-athletic group. The hypomanic tendency probably indicated that the non-athletic group was more active and enthusiastic than the athletic group as the mean T scores on these three scales represented normal behavior patterns.

The responses of the individuals in the athletic and non-athletic groups were somewhat concealed in the mean comparisons on the profile in Figure 5. For a better understanding of how the individuals responded, the number and percentage of subjects who scored above a T score of seventy on the Minnesota Multiphasic Personality Inventory was given in Table 10.

An examination of these responses revealed the variations which existed on the Psychopathic, Masculinity, and Hypomania Scales, but showed the small differences which existed on the other seven scales of the Minnesota Multiphasic Personality Inventory. On the Psychopathic Scale, 5 (21.74 per cent) athletes scores above a T score of seventy as

TABLE 10

THE NUMBER AND PERCENTAGE OF SIGNIFICANT INDIVIDUAL RESPONSES AS COMPARED TO THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY GENERAL TEST NORMS

Minnesota Multiphasic Personality Inventory		Athletes		Non-Athletes	
		Number	Per cent	Number	Per cent
(Number represents raw scores above 70 T score)					
Hs	Hypochondriasis	1	4.35	0	.00
D	Depression	1	4.35	2	8.70
Hy	Hysteria	2	8.70	2	8.70
Pd	Psychopathic	5	21.74	2	8.70
Mf	Masculinity - femininity	0	.00	3	13.04
Pa	Paranoia	1	4.35	0	.00
Pt	Psychasthenia	4	17.39	5	21.74
Sc	Schizophrenia	3	13.04	2	8.70
Ma	Hypomania	3	13.04	7	30.43
Si	Social introversion	0	.00	0	.00

compared to 2 (8.70 per cent) non-athletes which indicated why a statistically significant difference was found on this scale. The Masculinity Scale revealed 3 (13.04 per cent) non-athletes with high scores. This suggested a deviation of the basic interest pattern in the direction of the opposite sex. On the Hypomania Scale, 3 (13.04 per cent) athletes and 7 (30.43 per cent) non-athletes made high scores which substantiated the results obtained from the Guilford-Zimmerman Temperament Survey as

7 (30.43 per cent) non-athletes scored high on the energetic scale.

The Strong Vocational Interest Blank

The sixth hypothesis tested the responses of the athletic and non-athletic groups to determine if any significant differences existed on the Strong Vocational Interest Blank for Men. The results of these t-tests were revealed in Table 11.

TABLE 11

t-test OF THE MEAN DIFFERENCES OF 23 ATHLETES AND 23 NON-ATHLETES ON THE STRONG VOCATIONAL INTEREST BLANK

Athletic Non-Athletic Group Scales	Mean Difference	S. D. Difference	S. E. Difference	t*
Group I	-1.74	15.55	3.23	.54
Group II	-.26	16.26	3.39	.08
Group IV	10.83	26.13	5.44	1.99
Group V	8.65	21.36	4.45	1.99
Group VIII	5.57	28.71	5.98	.93
Group IX	-2.09	23.63	4.92	.42
Group X	-1.13	14.83	3.09	.37

*t for P. of .05 = 2.02; df = 44.

Before the mean differences could be determined, it was necessary to convert all the raw scores into standard scores so that all the negative numbers could be eliminated. The t-tests which were made between the mean differences on each of the Group Scales--Biological Sciences (I), Physical

Sciences (II), Technical (IV), Social Welfare (V), Business Detail (VIII), Business Contact (IX), and Verbal (X)--revealed no statistically significant differences existed between the two groups. However, it was noted that the results for Group IV and Group V did approach statistical significance in favor of the non-athletic group. These differences were illustrated in the profile in Figure 6 where the mean standard scores for each of the Group Scales were given. Group IV represented such

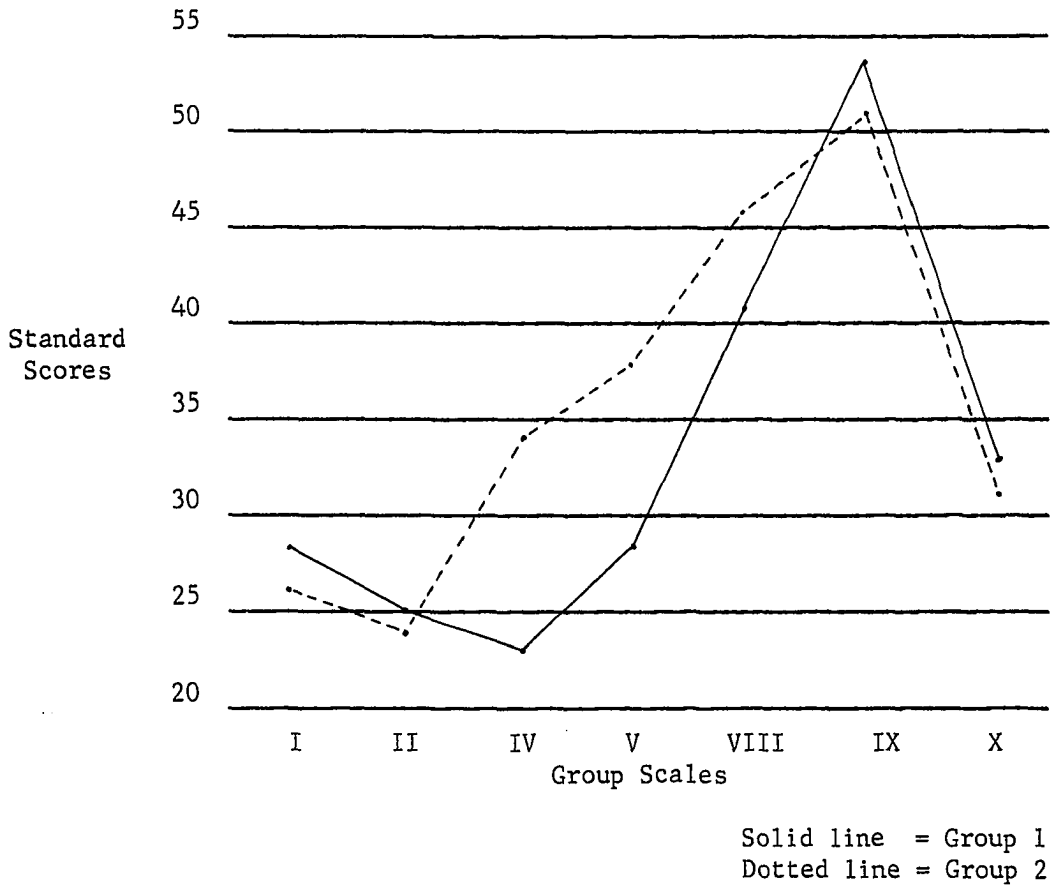

Figure 6. The Mean Occupational Interest Scores of the Athletic and Non-Athletic Groups on the Strong Vocational Interest Blank for Men.

occupations as farmer, carpenter, aviator, printer, mathematician, physical science teacher, policeman, and forest service men. Group V consisted of such occupations as Y.M.C.A. physical director, Y.M.C.A. secretary, public administrator, personnel manager, social science teacher, school superintendent, and minister. This seemed to indicate that the non-athletic group was more interested in these occupations than was the athletic group.

The mean standard scores of the athletic and non-athletic groups tend to conceal many of the unique characteristics of the individuals within the two groups. Therefore, the number and percentage of subjects who scored A ratings on the various Group Scales were given to reveal some of these characteristics. These results were shown in Table 12.

TABLE 12

THE NUMBER AND PERCENTAGE OF SIGNIFICANT INDIVIDUAL RESPONSES AS COMPARED TO THE STRONG VOCATIONAL INTEREST BLANK GENERAL TEST NORMS

Strong Vocational Interest Blank		Athletes		Non-Athletes	
		Number	Per cent	Number	Per cent
(Raw Scores) A ratings N = 46					
I	Biological Sciences	3	13.04	2	8.70
II	Physical Sciences	6	26.09	5	21.74
IV	Technical	3	13.04	10	43.44
V	Social Welfare	3	13.04	8	34.78
VIII	Business Detail	8	34.78	12	52.17
IX	Business Contact	17	73.91	14	60.87
X	Verbal Group	3	13.04	2	8.70

An examination of the data in Table 12 revealed that 17 (73.91 per cent) athletes had A ratings in the Group IX occupational scale. This scale represented the business contact group which included sales managers, real estate, and life insurance salesmen. The athletic group also had 8 (34.78 per cent) individuals who had A ratings in the Group VIII occupational scale. This scale included accountants, office men, bankers, and purchasing agents. These findings directly supported those found on the Guilford-Zimmerman Temperament Survey which suggested that most athletes preferred to work with people rather than with things.

The data also revealed that the non-athletic group had 14 (60.87 per cent) individuals who scored A ratings in the business contact group and 12 (52.17 per cent) who had A ratings in the business detail group. This explained why no statistically significant differences were found between the experimental groups and disclosed the similarity that existed between the two groups.

In general, the results of the Strong Vocational Interest Blank for Men signified that the athletes and non-athletes in this study had related vocational interest patterns as both groups seemed to have interests similar to those already successfully engaged in occupations concerning business contact and detail work. In addition to these interests, the non-athletic group also showed an interest in the technical and social welfare occupations.

In summary of the analysis of the data, the results of the t-tests which were made between the athletic and non-athletic groups revealed that statistically significant differences were found on the second, third, and fifth hypotheses while insignificant statistical differences were found

on the first, fourth, and sixth hypotheses. Therefore, the first hypothesis was sustained as no significant difference was found between the athletic and non-athletic groups on over-all grade-point averages; while the second hypothesis was rejected as a statistically significant difference was found in the total number of course-credit hours which favored the non-athletic group. The third hypothesis was rejected on the Theoretical value of the Allport-Vernon Study of Values, but was sustained on the other five values of the test. Since the fourth hypothesis revealed no statistically significant differences on any of the ten personality traits of the Guilford-Zimmerman Temperament Survey, it was sustained on all ten traits. The fifth hypothesis was rejected on the Psychopathic Scale of the Minnesota Multiphasic Personality Inventory, but was sustained on the other nine personality scales of the test. In the test concerning the sixth hypothesis, no statistically significant differences were found on any of the Group Scales of the Strong Vocational Interest Blank for Men and all seven scales of the sixth hypothesis were sustained.

CHAPTER V

SUMMARY AND CONCLUSIONS

The general purpose of this study was to investigate the differences which existed between a group of athletes and a group of non-athletes. Specifically, this study was designed to compare a full-scholarship athletic group and non-athletic group in the areas of academic achievement, personality structure, and vocational interest patterns. In an attempt to determine whether any differences existed, three main questions were posed:

1. Do athletes and non-athletes differ significantly in their academic achievements in over-all grade-point averages and total course-credit hours earned for six semesters of college work at the University of Oklahoma?

2. Do athletic and non-athletic groups differ significantly in their responses to a battery of three personality tests?

3. Is there a significant difference in the responses of the two groups to the Strong Vocational Interest Blank for Men?

Forty-six subjects were used in this study. Twenty-three of these subjects were selected from the athletic teams of five different sports at the University of Oklahoma. The limitations which were placed on the study restricted the total number of full-scholarship senior athletes and the twenty-three subjects represented the total number of

available athletic students. These athletes were matched in chronological age, sex, college classification, and intelligence scores with twenty-three non-athletes enrolled in the University of Oklahoma. These non-athletes were selected at random from a total of 1362 senior, non-transfer, male students who first enrolled in the University of Oklahoma during the fall of the school year 1955 and attended the next six continuous semesters.

The intelligence scores were controlled by using the freshman placement tests results on the Ohio State Psychological Examination and the Iowa High School Content Examination to match each subject equally. The mean scores for the athletic and non-athletic groups on the O.S.P.E. was 2.70 and on the I.H.S.C., 3.70. Although this did represent a high number of low decile scores, it represented the intelligence scores as controlled by the athletic group and was very similar to the findings which resulted from a study which was made of the 1952 freshman class.

The chronological age was controlled by selecting the non-athletic student from the same chronological age range as that of the athletic group. The mean chronological age for the athletic group was 262.39 months as compared to 262.04 months for the non-athletic group.

College classification and sex were controlled by using only those male, non-transfer students who were classified as college seniors. Therefore, the forty-six subjects represented twenty-three equally matched pairs.

The experimental task consisted in comparing the academic records of each subject individually and administering a battery of personality and interest tests to the two groups. These tests were the Allport-

Vernon Study of Values, the Guilford-Zimmerman Temperament Survey, the Minnesota Multiphasic Personality Inventory, and the Strong Vocational Interest Blank for Men. To determine whether any statistically significant differences existed between the two groups, the academic data and the responses to the battery of tests were treated statistically by using the correlated t-test. The "difference method" was used to assure maximum reliability and the necessary degrees of freedom were considered to compensate for the small number of subjects included in the two groups as was suggested by noted statisticians.

Six null hypotheses were formulated and tested in regard to the academic achievements, vocational interest patterns, and personality traits of the athletic and non-athletic groups. The testing of these six hypotheses resulted in thirty-five comparisons between the two groups.

The first hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups in over-all grade-point average. The range for the athletic group was from 1.86 to 2.93 with a mean grade-point average of 2.25. For the non-athletic group, the range was from 1.73 to 2.91 with a mean grade-point average of 2.28. This revealed a mean difference of .035 which was not found to be statistically significant and the first hypothesis was sustained. The results of this test were given in Table 3, page 37. An examination of Figure 1, page 38, showed that the athletic group had a tendency to make higher grades during those semesters in which they were not participating in intercollegiate athletics and was the only notable trend.

The second hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups in the total number of course-credit hours during the six semesters of college work from 1955-58. The range of course-credit hours earned by the athletic group was from 80 to 103 with a mean of 91.60 hours. For the non-athletic group, the range of course-credit hours was from 83 to 109 with a mean of 95.12 hours. A mean difference of 3.52 hours was found to be statistically significant and the second hypothesis was rejected. These results were shown in Table 4, page 39. A trend was noted in Figure 2, page 40, which indicated that the athletic group earned more course-credit hours during those semesters in which they did not participate in intercollegiate athletics. Therefore, it seemed the only real disadvantage to participating in intercollegiate athletics was in earning a sufficient number of course-credit hours to graduate in the customary four years of college.

In the test of the third hypothesis, the athletic and non-athletic groups were compared to determine whether any significant differences existed on their responses to the Allport-Vernon Study of Values test. The results in Table 5, page 42, revealed that a statistically significant difference was found on the Theoretical Value of the test which favored the non-athletic group. This indicated that the non-athletic group was more interested in science and the discovery of the truth accompanied by interests which appeared critical, empirical, and rational in an effort to systemize knowledge. On the other five values, trends were observed which indicated that both groups had a tendency to value those things which represented leadership, power, practicalness, and

usefulness. Conversely, very little value was placed on the altruistic and philanthropic aspects of life or those things which represented cultural beauty, grace, symmetry, or harmony. While the athletic group appeared to be more religious in their thinking, the non-athletic group seemed to be more interested in the discovery of truth. Therefore, the third hypothesis was rejected on the Theoretical Value and was sustained on the other five values of the Allport-Vernon Study of Values. These findings were shown in Figure 3, page 43, and Table 6, page 44.

The fourth hypothesis tested the athletic and non-athletic groups to determine whether any significant differences existed between the two groups on their responses to the Guilford-Zimmerman Temperament Survey. The results in Table 7, page 47, revealed that no statistically significant differences existed on the ten personality traits of the test and the fourth hypothesis was sustained. Based on the findings in Figure 3, page 48, and Table 8, page 49, the personal characteristics which perhaps described the two experimental groups were: energetic, impulsive, sociable, emotionally stable, unreflective, and feminine. The athletic group appeared to get along better with people, was more submissive and more objective; the non-athletic group appeared to be the most hypersensitive, critical, and outspoken.

The fifth hypothesis tested the two experimental groups on their responses to the Minnesota Multiphasic Personality Inventory. The results in Table 9, page 51, denoted a statistically significant difference on the Psychopathic Scale which favored the athletic group. However, these scores were not high enough to be considered as abnormal behavior by that group. This inferred that the athletic group was more likely to

digress from the accepted social mores, had less deep emotional responses, and profited less from experiences than the non-athletic group. These findings supported the results of the previous study made by LaPlace. In Figure 5, page 52, and Table 10, page 54, it was indicated on the Psychasthenia scale that the two groups had a tendency to encounter periods of mild depression, excessive worry, insufficient confidence, and the inability to concentrate; while the Hypomania scale signified that the non-athletic group was more ambitious, vigorous, and full of plans than the athletic group. These findings were in agreement with those reported earlier by Booth. Therefore, the fifth hypothesis was rejected on the Psychopathic scale, but was sustained on the other nine scales of the Minnesota Multiphasic Personality Inventory.

In the test of the sixth hypothesis, the results revealed that no statistically significant differences existed on any of the seven group occupational scales in the Strong Vocational Interest Blank for Men. These findings were disclosed in Table 11, page 55, and the sixth hypothesis was sustained on all scales. Significant trends were noted on Group Scales IV and V which signified that the non-athletic group had interests similar to those already engaged in the technical and social welfare occupations. Otherwise, the two experimental groups seemed to have related vocational interest patterns as both groups scored high in those occupations concerning business contact and detail. These findings were shown in Figure 6, page 56, and Table 12, page 57, and substantiated the major educational interests of the two groups.

Conclusions

The results of this study demonstrated that several differences existed between the athletic and non-athletic groups who attended the University of Oklahoma from 1955-58. These findings led to the following conclusions:

1. There was no significant difference between the athletic and non-athletic groups in over-all grade-point averages for three years of college study.

2. The non-athletic group was found to have earned a significantly higher number of course-credit hours during the three years of college.

3. The non-athletic group scored significantly higher on the Theoretical Value of the Allport-Vernon Study of Values which represented the technical and scientific values in life. No significant differences existed on the Economic, Aesthetic, Social, Political, or Religious Values.

4. No statistically significant differences were found on any of the ten personality traits included in the Guilford-Zimmerman Temperament Survey. However, the athletic group appeared to get along better with people than did the non-athletic group.

5. The athletic group scored significantly higher than the non-athletic group on the Psychopathic Scale of the Minnesota Multiphasic Personality Inventory, but abnormal behavior patterns as a group were not indicated. Insignificant differences were found on the other nine personality traits.

6. No significant differences were found in the vocational interest patterns of the athletic and non-athletic groups on any of the seven occupational interest scales of the Strong Vocational Interest Blank for Men. It was notable that the two groups scored extremely high on the Business Contact and Business Detail scales of the test.

The findings in the study suggest the need for further research in certain areas of academic attainment and personality development among college athletes. Since there was a significant difference found on the total number of course-credit hours earned between the two groups and there were personality differences found on some of the scales in the tests, it appeared that further research was needed to:

1. Study athletic groups in various colleges and universities to determine if participation in intercollegiate athletics delayed their graduation from college.

2. Study athletic groups in various colleges and universities to determine the average intellectual ability of athletes who participated in intercollegiate athletics.

3. Study the educational objectives of athletes to determine which major fields of study were most common for the group.

4. Study the responses of large numbers of college athletes as compared to the general norms of tests to determine more thoroughly the personality patterns which exist.

Research in these areas should provide additional information which is greatly needed by those who are concerned with the guidance and counseling of the students who participate in intercollegiate athletics.

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APPENDICES

APPENDIX A

THE AGE, INTELLIGENCE SCORES, AND ACADEMIC ACHIEVEMENTS OF 23 ATHLETES AND 23 NON-ATHLETES

Subjects	Athletic Group						Non-Athletic Group					
	C.A.	O.S.P.E.	I.H.S.C.	Hours	G.P.	G.P.A.	C.A.	O.S.P.E.	I.H.S.C.	Hours	G.P.	G.P.A.
1	261	3	3	87	179	2.06	262	3	3	87	219	2.52
2	262	3	9	103	296	2.93	259	3	9	101	222	2.20
3	258	2	1	88	176	2.00	262	2	1	102	230	2.25
4	259	4	4	89	207	2.33	261	4	4	94	173	1.84
5	262	4	6	80	155	1.94	259	4	6	96	279	2.91
6	267	3	4	87	173	2.00	264	3	4	85	154	1.82
7	261	2	1	94	252	2.68	258	2	1	94	243	2.59
8	263	2	2	90	190	2.10	260	2	2	84	185	2.20
9	256	5	8	93	213	2.29	256	5	8	107	276	2.58
10	269	1	5	88	180	2.05	265	1	5	91	230	2.53
11	267	1	4	85	176	2.07	266	1	4	96	175	1.82
12	265	1	1	91	214	2.35	269	1	1	93	179	1.92
13	258	3	6	92	178	1.93	258	3	6	109	269	2.47
14	262	1	3	89	172	1.93	260	1	3	101	256	2.53
15	263	3	3	92	212	2.30	258	3	3	99	284	2.87
16	265	3	5	96	279	2.91	266	3	5	100	173	1.73
17	265	1	2	97	180	1.86	264	1	2	108	213	1.97
18	262	1	2	91	190	2.09	265	1	2	95	179	1.88
19	266	2	1	101	233	2.31	271	2	1	89	217	2.44
20	266	1	5	94	233	2.48	256	1	5	96	198	2.06
21	255	1	1	92	220	2.39	259	1	1	83	162	1.95
22	267	5	7	97	250	2.58	267	5	7	89	265	2.98
23	256	1	2	90	190	2.11	262	1	2	88	204	2.32

APPENDIX B

THE CORRECTED RAW SCORES FOR 23 ATHLETES AND 23 NON-ATHLETES ON THE ALLPORT-VERNON STUDY OF VALUES

Subjects	Athletic Group						Non-Athletic Group					
	T	E	A	S	P	R	T	E	A	S	P	R
1	43	42	27	31	46	51	51	45	24	38	46	36
2	49	49	26	32	47	37	56	36	53	20	43	32
3	44	30	42	48	39	37	55	49	25	32	40	39
4	29	45	31	36	44	55	51	45	25	26	53	40
5	53	33	44	36	32	42	53	46	28	33	38	42
6	44	43	25	25	51	52	50	28	48	38	42	34
7	32	53	29	38	41	47	38	51	25	31	50	45
8	55	39	24	31	38	53	35	50	21	37	48	49
9	37	56	20	32	53	42	46	50	27	34	40	43
10	48	45	27	24	50	46	46	41	47	39	40	27
11	40	44	30	33	48	45	31	49	36	31	45	48
12	42	45	21	43	37	52	36	42	41	37	39	45
13	35	38	29	39	43	56	39	56	38	23	54	30
14	42	43	26	44	37	48	52	41	29	26	48	44
15	44	48	27	29	54	38	58	41	35	31	35	40
16	40	50	22	31	46	51	43	50	24	33	47	43
17	43	47	31	26	54	39	40	44	29	31	38	58
18	42	41	44	38	41	34	55	35	40	43	39	28
19	37	44	36	37	40	46	42	46	28	31	46	47
20	38	57	24	29	52	40	41	47	30	24	49	49
21	37	48	34	35	40	46	43	60	26	27	41	43
22	31	56	41	23	43	46	45	29	25	46	38	57
23	33	51	33	46	51	26	42	37	52	36	36	37

APPENDIX C

THE RAW SCORES FOR 23 ATHLETES AND 23 NON-ATHLETES ON THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

Subjects	Athletic Group										Non-Athletic Group									
	G	R	A	S	E	O	F	T	P	M	G	R	A	S	E	O	F	T	P	M
1	16	12	17	26	20	10	14	21	13	3	25	10	20	28	29	25	10	9	23	21
2	12	15	8	17	21	23	20	12	22	24	18	16	22	24	17	19	7	24	9	24
3	20	11	12	16	14	12	10	15	15	11	18	15	22	21	13	15	6	17	16	20
4	27	18	16	18	8	15	15	24	18	19	14	21	17	25	16	13	17	15	19	24
5	28	13	9	17	20	14	6	19	9	21	24	15	15	18	13	14	15	13	16	14
6	10	12	10	23	23	21	20	13	25	15	22	13	18	21	16	8	4	14	4	17
7	15	25	26	19	15	16	15	16	16	24	15	11	19	25	22	22	14	15	21	22
8	12	19	15	21	25	20	21	18	26	23	29	25	23	21	14	24	13	25	20	23
9	26	18	12	17	21	23	14	18	19	24	13	18	9	10	28	22	24	17	26	24
10	16	15	9	9	22	14	14	11	17	22	9	9	6	25	19	21	24	10	21	23
11	16	11	18	18	26	20	18	19	21	26	6	14	10	10	12	15	10	9	6	12
12	22	8	17	19	19	11	5	15	12	21	23	11	21	15	7	7	4	20	9	19
13	23	11	20	28	26	23	12	15	24	23	25	4	15	19	14	15	7	12	8	16
14	18	18	16	19	12	20	19	8	22	21	12	20	10	24	25	24	21	22	23	23
15	20	10	9	16	14	15	11	7	20	25	14	17	18	22	25	26	22	21	20	25
16	19	15	23	24	24	27	11	16	21	24	11	11	23	29	25	25	19	12	23	17
17	16	14	14	11	17	19	12	12	15	19	20	23	19	14	19	12	21	24	16	20
18	10	21	11	20	20	16	15	21	22	21	9	6	12	11	8	9	12	9	4	8
19	17	13	20	20	17	17	9	14	19	16	17	15	15	15	16	8	9	17	10	15
20	27	22	19	28	27	15	8	17	19	16	19	12	17	26	23	9	14	7	14	15
21	9	15	9	11	19	15	11	3	21	10	16	13	22	29	9	13	11	20	11	19
22	18	21	17	23	21	20	15	24	25	16	15	22	12	14	29	25	21	23	22	19
23	14	7	14	25	17	17	16	14	15	20	23	12	20	27	25	17	6	21	19	19

APPENDIX D

THE CORRECTED RAW SCORES FOR 23 ATHLETES AND 23 NON-ATHLETES ON THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

Subjects	Athletic Group										Non-Athletic Group									
	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
1	13	17	25	24	24	11	31	26	23	16	15	20	20	22	22	8	25	24	20	18
2	14	19	20	26	24	12	31	32	18	30	8	19	22	21	26	8	21	19	19	15
3	11	17	17	21	21	7	23	22	19	24	11	15	20	25	21	11	25	19	27	12
4	17	14	16	28	30	8	32	30	26	26	10	11	25	28	27	10	23	24	35	10
5	8	13	12	20	20	8	24	29	27	21	11	19	17	19	28	8	27	26	19	30
6	17	21	21	27	29	9	37	34	19	22	11	10	17	27	18	6	23	26	25	12
7	12	16	17	21	28	12	27	22	16	21	19	15	20	21	30	7	25	29	26	25
8	11	15	22	27	29	12	26	26	19	19	17	28	25	27	24	9	27	21	23	25
9	11	17	17	22	24	8	30	27	21	24	13	20	19	25	21	11	26	27	14	37
10	6	16	13	19	18	6	24	23	21	33	15	20	25	24	31	10	33	30	20	25
11	12	17	24	26	21	9	26	26	21	12	16	26	28	19	24	12	34	27	16	30
12	7	13	12	19	13	6	29	25	22	28	13	21	19	21	27	13	26	16	21	23
13	15	13	22	24	19	11	23	29	19	15	18	16	27	22	30	9	25	26	25	28
14	12	25	22	27	27	11	32	27	14	28	14	12	18	20	15	8	29	28	28	10
15	15	17	18	20	18	7	29	30	18	22	10	17	16	17	16	8	17	16	19	23
16	9	13	16	27	18	7	24	27	21	20	16	22	23	25	29	10	26	28	19	15
17	18	25	22	30	23	19	42	50	22	27	10	21	19	28	28	13	34	29	21	38
18	15	28	29	29	28	8	38	36	24	30	14	18	24	26	23	15	34	35	29	27
19	13	21	22	29	26	12	30	25	20	14	13	15	16	27	25	13	29	38	30	13
20	12	17	22	22	30	15	28	28	21	17	17	20	23	24	23	14	28	28	22	18
21	13	19	22	24	24	11	26	23	19	20	12	25	21	20	33	11	28	20	27	19
22	16	16	24	29	26	11	28	27	22	15	14	19	28	22	31	9	33	28	17	15
23	24	19	27	25	23	6	35	31	25	22	12	17	19	22	25	11	23	22	25	18

APPENDIX E

THE RAW SCORES FOR 23 ATHLETES AND 23 NON-ATHLETES ON THE STRONG VOCATIONAL INTEREST BLANK

Subjects	Athletic Group							Non-Athletic Group						
	I	II	IV	V	VIII	IX	X	I	II	IV	V	VIII	IX	X
1	-23	-122	95	78	-23	85	-57	3	-14	-80	-20	11	78	30
2	25	159	4	-143	8	15	-130	12	73	-10	15	-14	-1	-35
3	-141	41	27	-41	17	57	-140	-50	123	68	-81	59	18	-175
4	-80	-133	-61	103	8	128	-73	-78	-33	84	62	52	78	-167
5	10	81	-86	-136	-12	38	-13	-3	44	-100	-103	29	-18	-42
6	68	-10	-81	-47	87	72	32	-35	13	149	12	15	-17	-217
7	-97	-34	-132	-58	19	159	-133	-169	-141	-76	35	58	223	-48
8	1	48	186	20	-1	-93	-193	-132	-19	-264	-39	21	133	123
9	-187	-63	-158	-49	64	148	-108	44	148	121	-43	22	-83	-190
10	72	109	0	-151	-49	-52	-34	-10	-9	157	-8	6	-58	-240
11	-153	-58	47	32	27	57	-199	-119	-52	82	-20	106	96	-152
12	-127	-54	-179	-54	82	150	-103	-71	-152	-44	137	-26	113	-25
13	16	89	119	-146	-14	17	-54	-70	-58	-23	-80	18	90	-83
14	-118	16	-74	-73	64	118	-91	69	139	77	-42	-49	-57	-157
15	27	122	17	-162	-32	-37	-153	-21	93	158	36	70	-18	-208
16	-104	85	35	-122	20	40	-168	-234	-231	-13	92	124	134	-150
17	-68	-44	-161	-15	29	172	21	-22	-17	19	17	30	31	-147
18	-4	-51	-5	32	-16	91	-92	-167	-49	78	-39	103	87	-177
19	-21	-19	-30	-99	-36	47	-69	-234	-171	-13	110	46	178	-125
20	-258	-65	-95	19	78	170	-111	-86	-20	-17	-46	-3	106	-66
21	10	49	45	-73	-42	0	-89	-80	-96	21	38	18	-123	-110
22	-22	-41	73	32	65	84	-27	6	38	126	76	-50	-42	-81
23	-81	-117	-44	130	-13	111	-113	-72	-65	-59	-4	31	163	-53