

Dean of the Graduate School

A COMPARATIVE STUDY OF THE DIFFERENCES EXISTENT BETWEEN  
THE ACADEMIC ABILITY, MOTOR ABILITY, AND PERSONALITY  
ADJUSTMENT OF PHYSICAL EDUCATION MAJORS AND  
NON-MAJORS AT SAM HOUSTON STATE TEACHERS  
COLLEGE, HUNTSVILLE, TEXAS

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A THESIS

Presented to the Faculty of  
Sam Houston State Teachers College  
in Partial Fulfillment of the Requirements

for the Degree

MASTER OF ARTS

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by

Hilda Lee Williams

Huntsville, Texas

May, 1964

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### Purpose

It was the purpose of this study to determine the quality of the students who have chosen to major in physical education by comparing physical education majors with students who were majoring in other academic areas. Attention was directed to three major areas: (1) academic ability as determined by scores on the American College Test; (2) motor ability as evidenced by scores on the Scott Motor Ability Test; and (3) personality adjustment as indicated by scores on the California Psychological Inventory.

### Methods

The methods used to obtain data for this study were (1) examination of literature in the areas of academic ability, motor ability and personality adjustment, (2) establishment of criteria for the selection of tests of academic ability, motor ability and personality adjustment, (3) selection of standardized tests on basis of established criteria, (4) determination of population for the study through evaluation of similar studies, (5) administration



of the standardized tests of motor ability and personality adjustment, (6) requesting permission to use the ACT raw scores of the population from the guidance office at Sam Houston State Teachers College.

The data was then processed to determine the relationships existent between the academic ability, motor ability and personality adjustment of women freshman and sophomore physical education majors and non-majors.

### Findings

From the evidence presented in this study the following suggestions appear to be in order:

1. Physical education majors seem to be slightly below non-majors in capacity for status, social presence, self-acceptance, responsibility, self-control, tolerance, and achievement via conformance, and markedly below non-majors in femininity.

2. Physical education majors seem to be slightly higher than non-majors in dominance, achievement via independence, psychological mindedness, and flexibility.

3. Physical education majors and non-majors seem to be the same in sociability, sense of well-being, socialization, good impression, communality and intellectual efficiency.

4. In general, the personality adjustment of non-majors appears to be higher than that of physical education

majors as determined by the CPI.

5. Data on the ACT seemed to indicate that the physical education majors are markedly below the non-majors in English, slightly below the majors in mathematics, social studies and on a composite score, and the same as non-majors in the natural sciences.

6. Data revealed by the SMA would make it appear that physical education majors are markedly above the non-majors in ability to run an obstacle race, slightly above the non-majors in performance of the standing broad jump and basketball throw for distance, and somewhat higher than non-majors on a composite score of motor ability.

Approved:

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Supervising Professor

## ACKNOWLEDGMENT

Without the continuous guidance and counsel of the committee, Mary Ella Montague, Chairman, Margaret Powell, and Elizabeth Andrews, this research project might never have become a reality.

A sincere appreciation is expressed to the staff of the Women's Physical Education Department and to the students who participated in the study.

For her moral support and patience while the research was being conducted, the writer would like to express her gratitude to Coralie Emmons.

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## CHAPTER I

### INTRODUCTION

The problem of obtaining well qualified teachers for the nation's schools continues to engage the thoughtful attention of administrators, boards of education and the general public. As long ago as 1937, Smith<sup>1</sup> stated that the responsibility for the quality of students entering the teaching profession rests partially with the teacher training institutions. In 1947 the American Association of School Administrators gave recognition to the fact that a major objective of present day education must be ". . . the recruitment . . . of outstanding individuals as teachers. . ."2

Leading educators have been trying to establish standards for the selection of teaching personnel with the result that desirable qualities which appear to be important to the success of an educator have been isolated and studied. Through studies of this nature standards of selection for certification have been ascertained. Physical educators have been subject to the same certification requirements as have the personnel in other areas. However, the scope of

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<sup>1</sup>Frank Smith, "If We Want Better Teaching," Nations Schools, IXX (June, 1937), p. 35.

<sup>2</sup>American Association of School Administration, "The Platform," (1947), p. 239.



physical education has magnified itself in so many directions that the physical educator of today

. . . must know a vast amount more about the human individual and the meaning of his behavior; how to diagnose the needs of the individual in his need-situation and how to bring about a redirection of his behavior in the situation,<sup>3</sup>

than did his predecessors.

Physical education is a unique phase of the total educative process. It is unique in that it is the ". . . sole organized means for the development of neuromuscular skills so essential for the proper functioning of the individual as a moving motor mechanism."<sup>4</sup> Further, if physical education is to continue to be considered an academic discipline, an integral part of the total educative process, then the future physical educator will need to be cognizant of all the factors which make up the total individual. He will need to be able to provide his students with movement problems which require logical reasoning and synthesis. He will need to be able to understand the student through observable behavior and help the student to better understand himself through use of bodily movement. His goal will be to teach efficient movement skills

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<sup>3</sup>Rosalind Cassidy, New Direction in Physical Education for the Adolescent Girl (New York: A. S. Barnes and Co., 1937) p. 148.

<sup>4</sup>Jesse Feiring Williams, Clifford Brownell, and Elmon Vernier, The Administration of Health Education and Physical Education (Philadelphia: W. B. Saunders Company, 1958), p. 11.

which will enable the individual to communicate effectively with others, express himself more fluently and derive satisfactions from being able to accomplish movement tasks without tiring himself unnecessarily.

It would seem that a high degree of academic ability, personality adjustment, and motor ability would not only be desirable but a prerequisite for a quality physical educator. The question then of who will enter the profession of physical education looms with greater magnitude than ever before. It is a question which must be answered by those physical educators who are at the present time in the process of training the teachers of tomorrow. It is a question of selection, but selection on what basis?

Hurst<sup>5</sup> in studying practices of teacher selection found that among the qualities most often considered essential by physical educators in general were those of personality, scholarship, intelligence, and motor ability.

Davis<sup>6</sup> concurred with those findings to the extent that he included personality, professional aptitude and scholarship among the desirable traits and abilities which

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<sup>5</sup>Virginia Hurst, "Practices of Teacher Selection" (unpublished Master's thesis, Sam Houston State Teachers College, Huntsville, Texas, 1952), p. 44.

<sup>6</sup>Elwood C. Davis and Earl L. Wallis, Toward Better Teaching in Physical Education (New Jersey: Prentice-Hall, Inc., 1961), p. 8.

facilitate securing a position as a teacher of physical education. Forsythe and Duncan<sup>7</sup> listed personality, above-average mental ability, and professional competencies as prerequisite to good teaching. Williams, Brownell and Vernier<sup>8</sup> have agreed that the characteristics to be considered in selection of a good physical educator include personality adjustment, skill ability, and academic ability as well as moral character, personal appearance, and enthusiasm.

In an effort to extend research aimed toward effective teacher selection, the present investigator saw a need to study undergraduate physical education majors in light of those qualities which research has indicated as important for successful teaching in physical education. A study was made to determine the academic ability, motor ability, and personality adjustment of women students majoring in physical education at Sam Houston State Teachers College as compared to women students majoring in other academic areas.

#### Statement of the Problem

The problem of this study was to determine the relationships existent between the academic ability, motor

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<sup>7</sup>Charles E. Forsythe and Ray O. Duncan, Administration of Physical Education (New York: Prentice-Hall, Inc., 1951), p. 74.

<sup>8</sup>Williams, Brownell, and Vernier, op. cit., p. 312.



ability, and personality adjustment of freshman and sophomore physical education majors and non-majors enrolled in activity physical education courses for women at Sam Houston State Teachers College, Huntsville, Texas.

### Purpose of the Study

The general purpose of this study was to determine the status of undergraduate physical education majors and minors at Sam Houston State Teachers College with implications for teacher selection. Attention was directed to three major areas: (1) academic ability as determined by scores on the American College Test; (2) motor ability as evidenced by scores on the Scott Motor Ability Test; (3) personality adjustment as indicated by scores on the California Psychological Inventory. The specific purpose of this study was to compare the physical education majors and minors with students who were majoring and minoring in other fields to determine the quality of the students who have chosen to major in physical education.

### Definitions of Terms

The following terms are defined as used in the present study to aid the reader in clearly understanding the nature of the discussion concerning the problem.

Academic ability. This term is used by the investigator

to describe the competencies of the students in English, mathematics, social studies, and natural sciences as measured by the American College Test. A composite score on the test which includes the four items of English, mathematics, social studies, and natural science will also be used and will be designated as such within the discussion.

Activity physical education class. The term activity physical education is used to distinguish those classes in which the student participates through vigorous bodily movement from those classes usually referred to as theory classes in which the student participates primarily through verbal discussion.

American College Test. This particular standardized test is designed to measure academic ability in the areas of English, mathematics, social studies, and natural sciences. It is administered to all Sam Houston State Teachers College freshmen at the time they enter Sam Houston and is regarded by that college as a valid indication of academic ability and a predictor of success in college. Hereafter, in this report it will be referred to as the ACT.

California Psychological Inventory. This is a standardized personality test which measures eighteen factors of an individual personality. It was the test selected by the investigator as an objective determinant of the personality

adjustment of the subjects of this study. The eighteen factors of personality adjustment considered in this study include dominance, capacity for status, sociability, social presence, self-acceptance, sense of well-being, responsibility, socialization, self-control, achievement via conformance, achievement via independence, intellectual efficiency, psychological-mindedness, flexibility, femininity, tolerance, good impression, and communality. Each of the factors will be discussed separately within the text of the report in regard to the respective scores of the subjects comprising the two groups being studied. Hereafter the California Psychological Inventory will be referred to as the CPI.

Major or minor in physical education. A physical education major or minor is the term used in this study to describe those students who have elected to specialize in physical education by taking a prescribed number of semester hours of college work in physical education toward a baccalaureate degree. This term is used to distinguish those students specializing in physical education from those students who are also included in the present study, but who have elected to specialize in some other field of academic endeavor.

Motor ability. This is the term used to refer to the

ability of a student to perform a neuro-muscular skill which requires the use of gross bodily movement as measured by the Scott Motor Ability Test defined later in the report.

M-Day physical education class. The term M-Day is used in this report to refer to those physical education classes which meet on Monday, Wednesday, and Friday of each week as opposed to those classes which meet on Tuesday and Thursday of each week.

Non-physical education major. This term is used to refer to those students who are included in the present study but who have not elected to specialize in physical education. In the present study this group of students will be referred to as non-majors, although the investigator recognizes that most of the students are majoring in some area of academic work other than physical education.

Personality adjustment. The term personality adjustment is used in this study to refer to the ability of a group to solve ideological and socio-emotional problems as determined by scores on the California Psychological Inventory as previously described in this report.

Scott Motor Ability Test. This is a standardized test which measures the present status of motor ability (as previously defined in this report) which was administered to



each participant in this study. The test indicates scores on the ability of an individual to run an obstacle course, execute a standing broad jump, and throw a basketball for distance. Each of these measures will be described separately within the text of the report on the study. The Scott Motor Ability Test will be referred to hereafter as the SMA.

### Limitations of the Study

The investigator recognized that some qualifications set forth as criteria for a good teacher could not be measured objectively with present tests. She therefore limited measurement to the areas of academic ability, motor ability, and personality adjustment, because valid standardized tests were available for measuring those qualities.

The population of the present study was limited to selected groups of freshman and sophomore women enrolled in activity physical education classes at Sam Houston State Teachers College during the spring semester of the academic school year 1963-1964. The limitation to include only those students enrolled in activity physical education classes was made to insure the availability of students for the purpose of administering the tests of motor ability and personality adjustment. Details concerning the selection and administration of these tests are found in Chapter Two.

A further limitation was placed on the non-majors and

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minors to include only those freshman and sophomore women students enrolled in activity physical education classes which met on M-Days of each week. This limitation was made to facilitate handling of data and was justified on the basis that students had the option of enrolling in a course which met on M-Days or enrolling in a course which met on T-Days. Since approximately equal numbers of students enroll in all classes, it was decided that an objective sample of the total population could be obtained in that manner. Thus, the study was limited to approximately fifty per cent of the total population of freshman and sophomore women who were non-majors enrolled in activity physical education.

A similar limitation was not placed on the physical education majors and minors enrolled in activity physical education classes because the total population was of a size that made processing of the data a relatively minor undertaking. Therefore, the entire freshman-sophomore population of physical education majors and minors enrolled in activity physical education classes was included in this study.

#### Methods of Investigation

The following methods were used in obtaining data for this study: (1) the literature in the areas of academic ability, motor ability, and personality adjustment and teacher selection in physical education was examined;

(2) criteria for the selection of tests of academic ability, motor ability, and personality adjustment were established on the basis of the literature; (3) standardized tests were selected on the basis of the criteria established for this study; (4) the population for the study was determined through evaluation of similar studies which had been completed and on the basis of recommendations by faculty members at Sam Houston State Teachers College; (5) the standardized tests of motor ability and personality adjustment were administered to the population of this study, and; (6) scores on the selected test of academic ability were obtained through the courtesy of the guidance and testing department at Sam Houston State Teachers College.

The resulting data were then processed to determine the relationships between the academic ability, motor ability, and personality adjustment of women freshman and sophomore physical education majors and non-majors enrolled in activity physical education classes at Sam Houston State Teachers College.

#### Survey of Studies Related to the Present Investigation

A careful and systematic survey of literature was conducted by the writer to determine whether the present study duplicated any previous research. No study was found which duplicated the research reported in this study. Few studies



were found which were related to the present investigation. This reinforced the need for this research as it had previously been determined that there was a need for research which would help enable one to determine the quality of teachers entering the physical education profession. Studies relating to the present investigation were reviewed chronologically. Each review is followed by a discussion as to the similarities and differences of that study to the report of this investigation.

Sperling<sup>9</sup> studied the relationship between personality adjustment and achievement in physical education activities among three groups of college men engaged in varsity, intramurals, or non-athletic competition. He administered five scales of personality adjustment and found that a more socially desirable degree of personality development accompanies a greater degree of experience in physical education activities.

Sperling's study was similar to the present study in that he investigated the relationship of personality adjustment to success in physical education activities among athletes and non-athletes, whereas the present study is concerned with the

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<sup>9</sup>Abraham P. Sperling, "The Relationship Between Personality Adjustment and Achievement in Physical Education Activities," The Research Quarterly, XIII (October, 1942), pp. 351-363.

relationship between personality adjustment and motor ability of physical education majors and non-majors. The studies differ in that Sperling's study used college men as subjects and the present study used college women. The present study is concerned with the additional factor of academic ability, and differentiation between the two groups in the present study is based on college major rather than degree of athletic participation.

Scott<sup>10</sup> found that there was evidence of positive personality change in direct proportion to participation in physical education activities when she studied the contributions of physical activity to psychological development as seen by psychologists. Scott's study was not experimental in nature and, therefore, not comparable to the present study in terms of similarities and differences, but the investigator found that the study was significant because it upheld the belief that there are psychological values inherent in physical education activities which are realized in changing attitudes, improving the social efficiency and sense of well-being of the individual.

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<sup>10</sup>M. Gladys Scott, "The Contribution of Physical Activity to Psychological Development," The Research Quarterly, IXX (November, 1948), pp. 307-317.

Biddulph<sup>11</sup> found in studying the relationship between athletic achievement and the personal and social adjustment of high school boys that the superior athletic group had a higher mean self-adjustment score on the California Test of Personality than did the lower ability group. An additional finding significant to the present study was that although the high athletic ability and low athletic ability groups had very close to the same mean score for intelligence, the high ability athletic group had a generally higher grade point average at the one per cent level of confidence.

The present study is similar to that of Biddulph in that the investigator was comparing two groups of students in personality adjustment, motor ability, and academic ability.

The dissimilarities are that athletic achievement was not considered in the present study; that the subjects are college women rather than high school boys; and that a single test of personality adjustment was used in the present study, whereas, Biddulph used eight different measures including teachers' ratings and sociograms. Another difference was that the present study used scores on the ACT as the determinant of academic ability and Biddulph used the grade point

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<sup>11</sup>Lowell G. Biddulph, "Athletic Achievement and the Personal and Social Adjustment of High School Boys, The Research Quarterly, XXV (March, 1954), pp. 146-149.



average of each individual.

Merriman<sup>12</sup> attempted to find a relationship between personality traits and motor ability of high school boys. He classified students into upper and lower ability groups according to motor ability scores determined by the Phillips JCR test, into athletes and non-athletes according to participation, and matched these groups according to motor ability scores. He then analyzed the data to determine the significance of difference between scores on the CPI among athletes and non-athletes, and the relationship between the Phillips test of motor ability and the CPI. The significant finding of his study was that in so far as personality measurement may be taken to indicate levels of adjustment, persons who are high in motor ability tend to be better adjusted than individuals who are low in motor ability.

The study is similar to that of the present investigation in that measures of motor ability and personality adjustment were taken on two groups of students. An additional similarity was in the use of the CPI as a measure of personality adjustment.

The study of Merriman and the present study differ in

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<sup>12</sup>J. Burton Merriman, "The Relationship of Personality Traits to Motor Ability," Dissertation Abstracts, XX (July-December, 1959), pp. 950-951.



several respects: the subjects of the Merriman study were high school boys rather than college women as was the case in the present study; the two studies used different determinants of motor ability; the purpose of the present study was to determine differences between two groups rather than to compare the relationship between scores on two tests as was the case with the Merriman study.

Keogh<sup>13</sup> classified college men into groups according to athletic participation, intra-mural participation, no participation and motor ability. The CPI was administered to all groups and Keogh found no significant relationships between degrees of athletic participation, motor ability, and the eighteen separate scales of the CPI. He concluded that since his findings differed from that of previous research that the relationship thought to be existent between athletic participation and motor ability should be re-examined for a possible error in concept.

The study made by Keogh and the present study were similar in that college students were used as subjects and that CPI scores were the determinants of personality adjustment.

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<sup>13</sup>Jack Keogh, "Relationship of Motor Ability and Athletic Participation in Certain Standardized Personality Measures," The Research Quarterly, XXX (December, 1959), pp. 438-445.

The two studies differ in the respect that the present study was concerned with college women and the other was not. The present investigation dealt with a comparison of physical education majors and non-majors in terms of the three factors of academic ability, motor ability, and personality adjustment and Keogh's study was concerned with relationships between motor ability, athletic participation, and standardized personality measures.

The study which was the most similar to the present investigation was that conducted by Shirley<sup>14</sup> who completed a comparative study of the academic achievements, interests, and personality traits of athletes and non-athletes. He used matched-pair sampling according to age, sex, college classification and intelligence scores obtained from the Ohio State Psychological Examination and the Iowa High School Content Examination. He administered a battery of four personality tests: the Allport-Vernon Study of Values, the Guilford-Zimmerman Temperament Survey, the Minnesota Multiphasic Personality Inventory, and the Strong Vocational Interest Blank. He found no significant difference between the two groups on grade-point average and no significant differences

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<sup>14</sup>Jack Harold Shirley, "A Comparative Study of Academic Achievements, Interests, and Personality Traits of Athletes and Non-Athletes," (unpublished Doctorate dissertation, University of Oklahoma, 1960).

on any of the personality tests with the exceptions of the athletes' scoring slightly different on the psychopathic scale of the MMPI and the non-athletes scoring slightly higher on the theoretical part of the Allport-Vernon Study of Values.

Shirley's study was similar to the present study in that he was concerned with academic achievement and personality traits.

The two studies differed in that the present investigator used college women rather than men as subjects of the study. Another difference was that several indicators of personality adjustment and academic achievement were used by Shirley whereas the present study included only one measure for each of these factors. A further difference was that matched-pair sampling was used by Shirley and the writer used college majors to differentiate between the subjects of the study.

### Summary

Chapter One discussed the reasons for the investigator's interest in the problem, the statement of the problem and the purpose of the study. Terms used in this research undertaking were defined and the limitations of the study were listed and explained. An outline of the method of obtaining

data was presented and related studies were reviewed and discussed in terms of their relevance to the present study.

Chapter Two discusses in detail the procedures which were followed in conducting the research and processing the data.



## CHAPTER II

### PROCEDURES FOLLOWED IN CONDUCTING THE RESEARCH

Chapter Two is a detailed discussion of the procedures which were followed in conducting the research and processing the data.

Criteria for the selection of tests of academic ability and personality adjustment were established and tests were reviewed with reference to the established criteria. The population sample of physical education majors and non-majors had to be determined, as well as the methods of obtaining the data. The data was then processed to determine significant differences between the two groups being studied. Following is an exact account of the procedures followed in conducting the research.

#### Selection of a Test of Academic Ability

In selecting a test of academic ability, the writer discovered that Sam Houston State Teachers College had used the basic test battery of the American College Test for four years. The subjects who participated in this study were included in the group of students entering college within that four year period. The basic battery of the American College Test consists of four tests which have satisfactorily predicted academic achievement in the curricular areas of

English, Mathematics, Social Studies, and Natural Sciences at Sam Houston State Teachers College.

Information concerning the composite reliability and validity of the American College Test revealed coefficients of .94 for the reliability of Form 1-A and .95 for Form 1-B on the basis of the Spearman-Brown odds-evens technique, and composite validity coefficients of .39 to .59 as correlated with grade point averages which are generally considered a valid criterion of academic achievement.<sup>1</sup>

After comprehensive study of the rationale of the American College Test and re-examination of the criteria for the selection of the tests of motor ability and personality adjustment, the investigator concluded that the American College Test would fulfill the criteria requirements for the present study of academic ability. Also, student time spent in testing would be lessened since standard scores on a valid and reliable measure of academic ability were immediately available to the investigator without the necessity of administering the test.

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<sup>1</sup>American College Testing Program, Professional Staff. Technical Report 1960-61 Edition, (United States of America: Science Research Associates for the American College Testing Program, Inc., 1960), pp. 4-24.

Establishment of Criteria for the Selection  
of a Test of Motor Ability of College Women

An investigation of the literature revealed contradictions and inconsistencies in the use of the term motor ability.<sup>2</sup> Therefore, it was necessary to state that the measurement desired in the selected test of motor ability of this study was one which measured the individual's present status of achievement as well as indicating the ease with which he would probably be able to learn new motor skills. The components of general motor ability have been found to consist of those movements which are basic to activities found in the college physical education program. The movements basic to sports and dance activities are standing, walking, running and stopping, hopping, jumping, leaping, landing and falling, sitting, throwing and catching, holding, lifting, carrying, and striking.<sup>3</sup> The selected test of motor ability had to be designed to measure proficiency in at least some if not all of those components.

Because of the variability of tests designed to

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<sup>2</sup>Hilda L. Williams, "A Survey of Studies Related to Measurement of Sports Skills and Motor Learning," (Research Report, Sam Houston State Teachers College, May, 1963), p. 30. (Mimeographed).

<sup>3</sup>Marion R. Broer, Efficiency of Human Movement, (Philadelphia: W. B. Saunders Company, 1960), p. 339.



measure motor ability, it was necessary for the investigator to establish a set of criteria to which each standardized test might be subjected.

References in the area of measurement and evaluation revealed agreement among authorities<sup>4</sup> concerning the criteria for a good test. Such criteria are validity, reliability, objectivity, and practicality, the latter to include economy, convenience of administration, and interpretability. This list of general criteria was accepted by the investigator as the first criterion for the present study.

The subjects of this study were those students who were enrolled in physical education service classes which meet for one hour per day three times per week. Therefore, the criterion was established that the selected motor ability test had to lend itself to being administered during one class period, or one hour.

Because the nature of this study required the comparison of data derived from three different types of tests, the investigator felt that the processing of data could be facilitated if standard scores could be used for the selected motor ability test. Therefore, the third criterion required that the test be standardized and that standard scores for

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<sup>4</sup>Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Education and Psychology, (New York: John Wiley and Sons, Inc., 1961), p. 160.

college women be available.

The fourth criterion for the selection of a test of motor ability was necessitated by the limited equipment available to the investigator for the measurement of motor ability. Therefore, the selected test of motor ability had to be one which required equipment which is usually found within a physical education program, such as balls, gymnasium space, tumbling mats, or other equipment of that nature.

In summary, the criteria established for the selection of a test of motor ability were as follows: (1) the test had to be reliable, valid, objective, and practical, (2) the test could require no longer than one hour to administer, (3) standard scores for college women had to be available, (4) the equipment necessary for administering the test had to be that which is ordinarily found in the physical education program, and finally, (5) the test had to be designed to measure proficiency in the components of general motor ability.

#### Selection of a Test of Motor Ability

The literature revealed that no new tests of motor ability have been developed since 1943 and that very little research has been done to extend the reports on the validity and reliability of motor ability tests since the Humiston<sup>5</sup>

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<sup>5</sup>Dorothy Humiston, "A Measurement of Motor Ability in College Women," The Research Quarterly, VIII (May, 1937), pp. 181-185.

and Scott<sup>6</sup> tests were reported in 1937 and 1943. Perhaps one of the reasons for the lack of research in the area of motor ability has been the inability of investigators to agree on the meaning of the terms motor ability, motor capacity, motor educability, and motor fitness. According to Glassow and Broer<sup>7</sup> the term motor capacity is used to refer to innate ability and motor ability to refer to acquired ability or level of attainment. It was the purpose of this study to measure the acquired ability or level of attainment of the individual so that the scores on the motor ability test might be more readily compared to the selected tests of academic ability and personality adjustment. It would seem that if a test which measured motor capacity were used then a comparable mental test would be one which measured native intelligence. That comparison would be impossible because no valid test of motor capacity in college women has been developed.

There are three standardized tests which purport to measure motor ability in college women and have an established validity coefficient based on acceptable research criteria:

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<sup>6</sup>Gladys Scott and Esther French, Evaluation in Physical Education, (St. Louis: The C. V. Mosby Company, 1950), p. 193.

<sup>7</sup>Ruth B. Glassow and Marion Broer, Measuring Achievement in Physical Education, (Philadelphia: W. B. Saunders Company, 1938), p. 243.



The Garfiel Test of Motor Ability<sup>8</sup> measures the elements of speed, strength, and coordination with a validity coefficient of .73 based on the subjective ratings of judges, instructors, and students. The reliability coefficient is .75 and norms are available for each element measured. The test consists of seven items which include a stunt, tapping, running, steadiness tracing, and grip strength, leg and back strength. However, these norms are based on only fifty cases and the test has not been used in physical education as a measure of motor ability due to the fact that three of the seven items require small muscle coordination and no relationship has been established between muscle coordination of the hand and that of large muscle groups of the legs, arms and trunk.

The Humiston Motor Ability Test, developed in 1937, measures running, jumping, equilibrium, dodging, getting over obstacles, and adaptability, a total of seven test items. The reliability coefficient is .91 and the validity coefficient is .81 based on a composite of fifteen items and .62 with teacher judgment. The coefficients of correlation were established on four hundred and thirty-seven cases, and norms are available. The test can be administered to thirty-five

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<sup>8</sup>Evelyn Garfiel, "The Measurement of Motor Ability," Archives of Psychology, VI (1923), p. 62.



women in forty minutes by one examiner and two assistants. Glassow<sup>9</sup> reported that the report of the development of the test evidenced sound, careful work.

The Scott Motor Ability Test<sup>10</sup> consists of two batteries, one of three tests and the other of four tests. The longer of the batteries, consisting of dash, basketball throw, broad jump, and passes yielded a multiple correlation coefficient of .91 with the criteria of subjective ratings by Scott and three students, a sports criterion, McCloy's run, jump throw,<sup>11</sup> and a composite derived from the above three criteria which was called Criterion IV. The second of the batteries consisting of obstacle race, broad jump, and basketball throw yielded a multiple correlation coefficient of .87 with the criteria mentioned above. Reliabilities were computed on successive trials for each item in the batteries and ranged from .91 to .62 for approximately two hundred college women students. T-scales or standard scores are available for either battery with complete directions for administering and scoring. No time estimate for administration was recorded.

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<sup>9</sup>Glassow, op. cit., p. 263.

<sup>10</sup>Scott, op. cit., p. 199.

<sup>11</sup>C. H. McCloy, "Measurement of General Motor Capacity and General Motor Ability," Supplement to the Research Quarterly, V (March, 1934), p. 60.

In reviewing the criteria established for the test of motor ability, the investigator compared the Scott Motor Ability Test and the Humiston Motor Ability Test more thoroughly in terms of each of the criteria which had been established for the test of motor ability for the present study.

Criterion one stated that the test had to be reliable, valid, objective, and practical. The Scott Test has a validity of .91 and a reliability of .77. The scoring is objective and it would seem feasible that the test could be administered in one hour to a class of forty women by one examiner and five assistants. T-scales are available for scoring the tests with additional scales for physical education majors.

The Humiston Test has a validity of .81 based on criteria similar to that of the Scott test and another validity of .62 based on teacher judgment. Since the composite validity of the Scott test including teacher judgment is .91, it would be reasonable to assume that the Scott Motor Ability Test is a more valid measure of motor ability than the Humiston Motor Ability Test. The Humiston Test has a reliability of .91 correlated by different examiners for the same girls on different days and .85 correlated with repetition of the test on successive days. Scott's coefficient of reliability was correlated with examinees scores on

successive trials. Therefore, the respective reliabilities of the two tests cannot accurately be compared, and it was not actually necessary to compare the reliabilities for the purpose of the present study as either coefficient would be acceptable for indication of a reliable measure.

The scoring of the Humiston Test is comparable to that of the Scott Test, based on timing in terms of minutes and seconds, and measurement in terms of feet and inches. Both tests may be said to be objective. The Humiston Test can be administered to approximately forty women in forty minutes to one hour by one examiner and three to five assistants, as opposed to the same number of students measured in the same length of time by more personnel for the Scott Test. It appeared that the Humiston Test was more practical in terms of administration. However, whereas standard scores are available for the general college population and physical education majors on the Scott Test, and were based on more than two hundred women, respectively; norms for the Humiston Test are given by percentiles based on scores made by 2,195 college women which for this study would have to be converted into standard scores, and no distinction is made between the general population and physical education majors. Therefore, the comparison of the Scott Test and the Humiston Test indicated that the Scott Motor Ability Test correlated better with criterion one of the present study.



Criterion two stated that the test could require no longer than one hour to administer. Both tests met this criterion as stated previously with regard to the practicality element of criterion one of the present study.

Criterion three stated that standard scores for college women had to be available. As previously discussed, it was found that the Scott Motor Ability Test has norms based on standard scores for the general college population and a separate scale for physical education majors. The Humiston Motor Ability Test has norms based on percentile scores and does not distinguish between the general college population and physical education majors. Therefore, the Scott Motor Ability Test seemed to correlate better with criterion three of the present study.

Criterion four stated that the equipment necessary for administering the test had to be that which was ordinarily found in the physical education program. The equipment necessary for administering the Humiston Test was as follows: chalk, thirteen folding chairs, two tumbling mats, one regulation gym box, one ladder, two basketballs, one pair of jumping standards, one tape measure and floor space at least ninety feet in length, as well as stop-watches for timing. The Scott Motor Ability Test requires the following items of equipment: three or four basketballs, three stop-watches, one whistle, unobstructed wall space, one beat



board (a solid 2-foot board may be substituted), one gymnasium mat, two jump standards and a pole; chalk for marking.

All the items necessary for administering the Scott Motor Ability Test were available to the investigator through the regular physical education program. The gym box (Swedish vaulting box), and the ladder required for the Humiston Test were not available. The gym box could have been obtained, but there was no means of stabilizing the ladder without destroying the gymnasium floor. Thus, it appears that the Scott Motor Ability Test better met the requirements of criterion four of the present study.

The final and perhaps most important basic criterion for the selection of a test of motor ability stated that the test was to be a measurement of proficiency in the components of motor ability which for the purposes of the present study was a term used to refer to the individual's present state of achievement as well as to indicate the ease with which he would learn new movement skills. Scott<sup>12</sup> has defined motor ability as follows:

Motor ability is sometimes used to mean achievement in basic motor skills, or it may be interpreted as a more general term combining the concepts of motor educability and achievement. Motor ability measurement is usually concerned with some form of running, throwing, and jumping.

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<sup>12</sup>Scott, op. cit., p. 192.

The Scott Motor Ability Test combined the concepts of motor educability and achievement, therefore making the instrument valuable as a classifier and a predictor. Humiston has defined motor ability more specifically as "the ability to get around in situations demanding the use of the big muscles-- the ability to shift the body from one place to another."<sup>13</sup> She states, "The fundamental elements of motor ability are running, jumping, getting up from the floor, getting over obstacles, dodging, and hand-eye coordinations."<sup>14</sup> She recommended the use of her test for classifying students and as an indicator of present status. Although the purposes for which the tests were developed were found to be different, the criteria against which they were validated were similar enough to indicate that the tests of motor ability developed by Scott and Humiston probably measure very nearly the same elements. However, for the purposes of this study, Scott seemed to have more clearly defined the limits of the Scott Motor Ability Test in the same terms that were set forth by the present investigator in establishing criteria for the selection of a test of motor ability.

In summary, a comparison was made between the Humiston Motor Ability Test and the Scott Motor Ability Test in terms

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<sup>13</sup>Humiston, op. cit., p. 181.

<sup>14</sup>Ibid., p. 182.

of the criteria set forth by the investigator for the selection of a test of motor ability for college women. Those two tests were compared because they were the only tests of motor ability which had been found to be valid, reliable, and practical measures of motor ability as defined by the investigator earlier in the study. The Garfiel Test of Motor Ability was considered, but was found to be lacking in the measurement of large muscle-group activity.

The Humiston and Scott Tests were found to be comparable in the factors of validity, reliability, and objectivity. It was found that the Humiston Test did not have norms for standard scores whereas the Scott Test did. The Humiston Test required more equipment for administration than did the Scott Test, although both tests could be administered in about the same length of time to a class of thirty-five to forty women, using the same number of student assistants.

In the final analysis the Scott Motor Ability Test was selected as the instrument of measure for motor ability in the present study because of a less demanding equipment requirement. Its purpose was more clearly stated in terms of the present study, which was the measurement of present status of achievement in motor skill as well as the ease with which a student will learn new motor skills.



Establishment of Criteria for the Selection  
of a Test for Personality Adjustment

Research has indicated that "The process of adjustment refers to the entire sequence (of behavior) from the time a need, tension, or drive is aroused until the need is satisfied, the tension reduced, or the drive extinguished."<sup>15</sup> The needs, tensions, and drives are present in every individual to varying degrees at different times, and of course these same factors would be expected to be operative on the college women who were used as subjects in the present study. Therefore, it was necessary for the investigator to determine which of certain tensions, needs and drives seemed to be in greater dominance throughout the years when a student is in college. References<sup>16</sup> concerning personality adjustment revealed that the most important areas of adjustment for the college student are those of academic adjustment, vocational choice, ideological problems, and socio-emotional problems.

Because academic ability was to be treated as a separate factor in this study, and because the vocational

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<sup>15</sup>C. H. Mowrer and C. Kluckhohn, Personality and the Behavior Disorders, (New York: Harcourt, Brace and Company, 1953), pp. 69, 72.

<sup>16</sup>Ibid.; Roger Heynes, The Psychology of Personal Adjustment, p. 411; Ashley Montagu, Education and Human Relations, pp. 119-120.



choice of the subjects had been determined previously, it was decided that the test for personality adjustment to be used in the present study should be one which measured adjustment to ideological and socio-emotional problems.

In establishing criteria for the selection of a test of personality adjustment, authoritative references<sup>17,18,19</sup> in the area of measurement and evaluation and in the specific area of psychological testing were consulted. The general criteria of validity, reliability, objectivity and practicality were given due consideration and made the first criteria for the selection of the personality test.

In addition to the general criterion mentioned above, specific criteria were established as follows in accordance with the criteria accepted for the selection of a test of motor ability.<sup>20</sup> The selected test of personality adjustment must lend itself to being administered in one class period or one hour; must be standardized and standard scores for college women must be available, must (as was determined in the

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<sup>17</sup>Suggestion by V. L. Sternitzke, personal interview, January, 1964.

<sup>18</sup>Oscar Burros, Editor, Fifth Mental Measurements Yearbook, "Non-Projective Personality Tests," pp. 96-157.

<sup>19</sup>Robert L. Thorndike and Elizabeth Hagen, loc. cit.

<sup>20</sup>Ibid.

previous discussion of the nature of personality adjustment of college women) be designed to measure adjustment to ideological and socio-emotional problems. One factor which was mentioned generally in reference to the selection of each of the tests, but which came under special consideration in the selection of the test of personality adjustment was that of interpretability. Due to the comparative nature of the present study, the selected test had to be one which was subject to being interpreted statistically. That factor eliminated consideration of tests which were scored by use of the projective technique, or interpreted in terms of verbal response of the subject.

In summary, the criteria established for the selection of a test of personality adjustment which best served the purposes of this investigation were as follows: (1) the test had to be valid, reliable, objective, and practical, (2) the test had to be one which measured the individual's ability to adjust to ideological and socio-emotional problems, (3) standard scores had to be available, and (4) the test could require no longer than one hour to administer.

#### Selection of a Test of Personality Adjustment

After establishing criteria for the selection of a test of personality adjustment, the writer searched the psychological literature for standardized, non-projective personality

tests. The following tests which purported to measure personality adjustment were found and subjected individually to the criteria: California Psychological Inventory, California Test of Personality, D. F. Opinion Survey, Gordon Personal Inventory, Gordon Personal Profile, Mental Health Analysis, Minnesota Multiphasic Personality Inventory, Minnesota Personality Scale, Objective Analytic Personality Test, and The Personality Inventory.

The literature on the subject of personality evaluation is concerned more thoroughly with the processes of validation used by authors and publishers of tests than with specific validity coefficients. Therefore, the investigator concluded that a more efficient means of accepting or rejecting the validity of a test would be to accept the critical judgment of eminent authorities in psychology. The critical reviews accepted as authoritative for the validity of the tests examined for the study were those which appeared in Burros' Mental Measurements Yearbooks Three, Four, and Five.<sup>21,22,23</sup> The purpose of those publications has been to provide

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<sup>21</sup>Oscar K. Burros, Editor, Third Mental Measurements Yearbook, (New Jersey: The Rutgers University Press, 1949), pp. 51-124.

<sup>22</sup>Oscar K. Burros, Editor, Fourth Mental Measurements Yearbook, (New Jersey: The Gryphon Press, 1953), pp. 67-166.

<sup>23</sup>Oscar K. Burros, Editor, Fifth Mental Measurements Yearbook, (New Jersey: The Gryphon Press, 1959), pp. 86-212.



assistance in careful selection of standardized tests. The editors of the Yearbooks try to present impartial data regarding the relative value of all tests which have been published. The critical reviews are authored by individuals experienced in the validation and use of the tests, so it would seem that the information obtained from these references would be sufficient evidence of the validity of a test of personality adjustment. Each of the tests mentioned on the previous page was studied through the critical reviews and additional references which had used the test as a research instrument.

#### Summary of the Critical Reviews

California Test of Personality. The principle components of the California Test are self adjustment and social adjustment with specific categories under each area. It is a non-timed test, but usually requires about forty-five minutes to administer. According to Shaffer<sup>24</sup> the California Test of Personality has a reliability of .92 to .93 based on the split half method corrected by the Spearman Brown Formula as determined for populations of 237 to 792 for the various forms. However, the validity is unestablished and the norms

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<sup>24</sup>Laurance F. Shaffer, Third Mental Measurements Yearbook, Oscar Burros, ed., p. 56.



which have been established are based on cases from Los Angeles and surrounding areas. Therefore, assuming that validity of the test could be established, there is some doubt as to the applicability of the test in other sub-cultural areas. With the 1953 revision of the test Sims <sup>25</sup> found that the test seems to have as much validity as most other tests of the same kind, but that the degree of validity will vary with the amount of rapport established with the testees and that the terms used in describing the areas of personality adjustment are somewhat vague when compared to clinical definitions of lack of adjustment.

California Psychological Inventory. This is a more recent test, published in 1956 and therefore less research has been done which has utilized it. Cronbach<sup>26</sup> found that the development and technical work are of a high order with reliability having been established through test-retest procedures. Norms for males and females have been established based on several thousand accumulated cases and the test manual gives plentiful correlations with other tests. The validity coefficient has been found to be about .22 which

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<sup>25</sup>Verner M. Sims, Fifth Mental Measurements Yearbook, Oscar Burros, ed., 1958, p. 101.

<sup>26</sup>Lee J. Cronbach, Fifth Mental Measurements Yearbook, Oscar Burros, ed., p. 97.

seems to be acceptable for tests of this type. Again the profiles result in complex social resultants rather than psychological terms. Shaffer<sup>27</sup> in reviewing the Inventory for the Journal of Consulting Psychology compared the test favorably with the Minnesota Multiphasic Personality Inventory, stating that it is better for use with normal subjects as it tries to assess personality characteristics important for social living. There seems to be a high correlation between the scales which could confuse the implications of the profile for counseling purposes, but that factor would not necessarily affect the value of this Inventory for research purposes. The Inventory requires from forty-five to sixty minutes to administer and yields scores on the following factors of personality adjustment: tolerance, good impression, and communality, dominance, capacity for status, and sociability, social presence, self-acceptance, and sense of well-being, responsibility, socialization, and self-control, achievement via conformance, achievement via independence, and intellectual efficiency, psychological-mindedness, flexibility and femininity.

DF Opinion Survey. Published in 1954, this survey requires forty-five minutes to administer and was constructed

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<sup>27</sup>Laurance F. Shaffer, Journal of Consulting Psychology, XXI (August, 1957), p. 359.

on the basis of factor analysis. The reliability coefficient was found to be about .86, and the construct validity reports are convincing, but there is no evidence of correlations with similar tests and the authors themselves claim no additional validity, calling it an "experimental" instrument. Reviews by Baggaley,<sup>28</sup> French,<sup>29</sup> and Meadows<sup>30</sup> corroborate with this viewpoint. Therefore, it seemed doubtful whether the DF Opinion Survey would be useful in the present research.

Gordon Personal Inventory. Reviews of this Inventory revealed that there is no evidence of validity presented in the test manual and Fricke<sup>31</sup> strongly recommended against its use until further research and revision has occurred which gives stronger indication of the validity of the instrument. There were no reviews which recommended its use, and on the basis of this fact the investigator declined to further consider using the Gordon Personal Inventory in the present study.

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<sup>28</sup>Andrew R. Baggaley, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 111.

<sup>29</sup>John W. French, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 111.

<sup>30</sup>Arthur W. Meadows, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 112.

<sup>31</sup>Benno G. Fricke, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 125.



Gordon Personal Profile. Published in 1953 and requiring from fifteen to twenty minutes to administer, the Profile consists of four reliable and independent measures of personality including ascendancy, responsibility, emotional stability, and sociability. In the Profile, as is true of the Gordon Personal Inventory, adequate validity has not been established, although the reliability coefficient has been found to be .85. Radcliff<sup>32</sup> found the validity data which does exist to be more impressive than that typical of most questionnaires. In another review Shaffer<sup>33</sup> criticized the fact that the norms available are based only on college students of one geographical area, which would serve to indicate that the Profile has one of the same weaknesses as the California Test of Personality.

Mental Health Analysis. The Analysis consists of two sections which are scored as Mental Health Assets and as Mental Health Liabilities. The reliability coefficients are .91 and .92 respectively, for each of the sections. Educators and psychologists criticized this test for its lack of evidence of validity as well as the approach which is

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<sup>32</sup>John A. Radcliff, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 129.

<sup>33</sup>Laurance F. Shaffer, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 129.



considered outmoded. The Mental Health Analysis has not been reviewed since 1949, soon after its publication, and is not listed in the latest (1959) edition of Mental Measurements Yearbook.

Minnesota Multiphasic Personality Inventory. This standardized test has been referred to by Norman<sup>34</sup> as follows: "This instrument is probably the most carefully constructed and thoroughly researched inventory available for personality assessment." Other reviews have indicated similar reactions. Although the length of the test (550 questions) would seem to prohibit widespread use of the test, it has been indicated that the test can be administered in forty to ninety minutes. Scoring scales have been constructed for the following personality trends: hypochondriasis, depression, hysteria, psychopathic deviate, masculinity-femininity, psychasthenia, paranoia, schizophrenia, and hypomania. Three scales have been designed to check the validity of the test results, the lie scale, the F scale to determine comprehension, the K scale on which a high score tends to reduce the magnitude of doubtful scores. The scale which seems to have the highest reliability is the one which measures depression, while the psychasthenic scale

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<sup>34</sup>Warren T. Norman, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 167.

is almost useless, according to Eysenck.<sup>35</sup> Rotter<sup>36</sup> has found that the reliability coefficients seem to range between .71 and .83 on individual scales and that the scales may have high intercorrelation. The validity of this test has not been established with certainty, but research involving construct validity is impressive and probably more attempts have been made to validate the instrument than any other similar inventory. Its value to clinical practice has been recognized, but there is some doubt as to its value even to research for the investigator who is clinically untrained.

Minnesota Personality Scale. This scale which was published in 1942 and has not been reviewed since 1949 seems to have some degree of merit in terms of good internal consistency and high reliability. However, French<sup>37</sup> found that the test was unsuitable for selective purposes. It purports to measure morale, social adjustment, family relations, emotionality and economic conservatism. There is some evidence that the test does differentiate, but validity has not been established. In addition to its doubtful

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<sup>35</sup>H. J. Eysenck, Third Mental Measurements Yearbook, Oscar Burros, editor, p. 107.

<sup>36</sup>Julian B. Rotter, Third Mental Measurements Yearbook, Oscar Burros, editor, p. 109.

<sup>37</sup>John W. French, Third Mental Measurements Yearbook, Oscar Burros, editor, p. 111.

validity, some of the tests from which items were taken have since been found to be poor measures of personality.

Objective Analytic Personality Test. Developed by Cattell, this test may later be found to be the best of its kind. It consists of a kit of materials and requires several sessions to administer. No norms have been established and to understand and interpret this test would require extensive knowledge of Cattell's personality theories. Eysenck<sup>38</sup> highly recommends the use of this test for one who has the time and knowledge as it may be a break-through in the field of personality assessment.

The Personality Inventory. This inventory was designed to measure neurotic tendency, self-sufficiency, introversion-extroversion, dominance-submission, confidence, and sociability. The single review which was available<sup>39</sup> stated that the inventory does seem to identify general personality inadequacies within the normal range. There is no reference as to validity and the scoring involves a complicated procedure. The test was first reviewed in the Fourth Mental Measurements Yearbook and apparently no additional research

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<sup>38</sup>H. J. Eysenck, Fifth Mental Measurements Yearbook, Oscar Burros, editor, p. 170.

<sup>39</sup>Leona E. Tyler, Fourth Mental Measurements Yearbook, Oscar Burros, editor, p. 139.



or revision has taken place since that time. The test requires approximately twenty-five minutes to administer.

After examining each of the available tests of personality adjustment and subjecting it to the criteria established for the present investigation, the writer found that the Minnesota Multiphasic Personality Inventory and the California Psychological Inventory seemed to better meet the criteria of the present study. Therefore, these two tests were further compared and examined. It was found that while the California Inventory has an established validity of .22, the Minnesota Inventory validity has not been established. On the other hand, the aspects of personality measured by the Minnesota Inventory are more clearly defined than those aspects of personality for which the California Inventory was designed. The California Inventory requires forty-five to sixty minutes to administer, while the Minnesota Inventory requires forty to ninety minutes. The Minnesota Inventory was designed for use with the abnormal individual; the California Inventory was designed for use with the normal individual. The development and technical work of both tests are of a high order. Norms based on several thousand cases have been established for both of the tests. Interpretation of the California Inventory is much less complex than that of the Minnesota Inventory.

In summary, the factors which indicated that the



California Psychological Inventory would better serve the purposes of the present investigation were those of time, validity, test development criterion, and interpretability. Those factors which indicated that the Minnesota Multiphasic Personality Inventory would better serve the purposes of the investigation were those of test development criterion and reputability as well as high reliability. It was concluded by the present investigator that the California Psychological Inventory would better meet the criteria for a test of personality adjustment of the college women selected for this study.

Thus, the standardized tests selected for use as measures of academic ability, motor ability, and personality adjustment were the American College Test, the Scott Motor Ability Test, and the California Psychological Inventory. Future reference to these tests will be designated by the initials of the tests as ACT, SMA, and CPI.

#### Selection of Population Sample

The population for this study was comprised of freshman and sophomore physical education majors and non-majors enrolled in activity physical education classes. The total population of physical education majors was selected for this study because the total number of majors was small enough to allow unencumbered handling of data. Forty-three physical

education major students participated in the study.

The non-major sample was determined by the week-days on which the total population of non-majors had elected to enroll in an activity physical education course. The distribution of students between M-Day and T-Day classes was approximately equal. Since the students had a choice as to class time, it was decided that the selection of either group of students would render a sample representative of the total population. The M-Day classes were selected for this study because it had previously been determined that only one hour of class time would be needed for administering each of the selected tests. By using M-Day classes, the investigator was able to keep interference with the usual instructional program to a minimum of two hours during the semester instead of three hours as would have been the case in the event that T-Day classes had been chosen. Inclusion of the total population of freshman and sophomore non-majors would have rendered the data cumbersome to handle. Therefore, approximately one-half the total population or two hundred and four non-major students were included in the present study.

#### Methods of Obtaining the Data

After the standardized tests of academic ability, motor ability, and personality adjustment had been selected and the population to be included in the study had been

determined, the investigator began the collection of data.

The names of each of the major and non-major students enrolled in M-Day activity physical education were obtained from the instructors of the classes and a complete list of students participating in the study was compiled.

Worksheets were prepared for recording the data which were to be obtained on each student participating in the study. Those worksheets were sent to the Guidance Office of Sam Houston State Teachers College where ACT scores on each student are filed at the time he enters college. Raw scores on each facet of academic ability measured by the ACT were recorded for each student participating in the present study.

A score card for each student was prepared for use during the time when the SMA was being administered. Twenty upperclassmen physical education majors were asked to assist during their free hours with the administration of the SMA. A preliminary meeting was held with the student assistants to explain the purpose of the study, the SMA, and individual duties regarding the administration of the test. Directions to be given to the subjects of the study, use of equipment, and proper methods of recording scores were explained. A schedule was made so that the investigator would have five assistants for each hour that the test was being administered. A schedule of the time when each class would be tested was sent to each instructor. A limit of forty-five students was



set for each testing hour.

Testing stations for the obstacle course, basketball throw for distance, and standing broad jump were organized according to the suggestions of the author of the test.<sup>40</sup> At the time when each class arrived to take the SMA, the investigator gave the directions as indicated by Scott.<sup>41</sup> Each student completed the prepared score card with her name, classification, and major. As she moved from station to station taking the test, her raw scores on the obstacle course, basketball throw for distance, and standing broad jump were recorded by the student assistants at the different stations.

Raw scores for each student were later transferred from the individual score cards to the master worksheets according to the regression equation derived from the multiple correlation.<sup>42</sup>

The CPI was administered by the investigator to each class during the regular meeting time according to a schedule similar to that which had been arranged for the SMA. In this instance, the number of students was limited to thirty-five per hour to avoid crowding the classrooms and to insure

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<sup>40</sup>M. Gladys Scott and Esther French, Evaluation in Physical Education, pp. 193-197.

<sup>41</sup>Ibid.

<sup>42</sup>Ibid., p. 199.



comfortable testing conditions. Students were given directions according to the suggestion of the test manual.<sup>43</sup> The CPI was machine scored and the raw scores were then recorded on the master worksheets.

After the data for academic ability, motor ability, and personality adjustment had been obtained, the investigator found that a comparison could be made between the majors and non-majors on twenty-seven scales determined by scores on the ACT, SMA, and the CPI.

#### Methods of Processing the Data

For each of the eighteen scales on the CPI, the five scales on the ACT, and the four scales on the SMA, the data were processed to determine the differences existent between the physical education majors and the non-majors in the study.

Each student was given an identification code number and a group code number. Code numbers for physical education majors extended from one through forty-three and major students were designated as Group One. Code numbers for non-major students extended from one through two hundred and four, and students in this category were designated as Group Two. This system was used because the data were processed

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<sup>43</sup>Harrison G. Gough, California Psychological Inventory Manual, (Palo Alto, California: Consulting Psychologists Press, Inc., 1957), p. 8.

by IBM computers.

The means, standard deviations and standard errors of measurement were computed for each scale. Using the mean and standard deviation, a standard score was found for each student in each group and converted to a T-Scale score.

The percentage of students in each group scoring above the mean on each scale was then computed to give a basis for comparison of the physical education majors and non-majors in academic ability, motor ability, and personality factors. The formulas used in each of the statistical procedures were those found in Thorndike's and Hagen's<sup>44</sup> text on Measurement and Evaluation in Education and Psychology.

### Summary

Chapter two was concerned with the procedures followed in conducting the research. The criteria for selection of the tests, the selection of the tests, the selection of the population sample, methods of obtaining data, and methods of processing the data were presented and described in detail.

The results of the computation of the data are reported in Chapter three.

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<sup>44</sup>Robert L. Thorndike and Elizabeth Hagen, Measurement and Evaluation in Education and Psychology (New York: John Wiley & Sons, Inc., 1961), pp. 96-157.

## CHAPTER III

### FINDINGS, INTERPRETATIONS AND IMPLICATIONS

Chapter Three is a report of the findings and interpretations of the data collected on the physical education majors and non-majors participating in the study to determine differences existent between the academic ability, motor ability and personality adjustment of the two groups.

The California Psychological Inventory measures eighteen different aspects of personality adjustment which have been divided into four classes for assistance in interpretation. Class One consists of six measures of poise, ascendancy and self-assurance. Class Two consists of six measures of socialization, maturity and responsibility. Class Three consists of three measures of achievement potential and intellectual efficiency. Class Four consists of three measures of intellectual and interest modes. Data showing differences in personality adjustment of the major and non-major groups were organized into scales corresponding to the eighteen measures which were categorized into the four classes. These classifications are explained in detail in the discussion of the data on the CPI which follows.

The Personality Adjustment of Physical Education  
Majors and Non-majors  
Findings, Interpretations and Implications of Class One

As mentioned previously, the scales on the CPI were classified according to the specific personality trait measured. Class One consisted of six scales which were designed to measure poise, ascendancy, and self-assurance. The six scales included in Class One were those of dominance, capacity for status, sociability, social presence, self-acceptance, and sense of well-being. According to the coding system used by the investigator in computing the data, the numbers for the six scales in Class One were one through six in the order mentioned above in the listing of names of the scales, i.e., number one: dominance.

The results of the data obtained on the six scales categorized as Class One of the CPI may be seen in Table One.

The specific measure of scale one was that of dominance. The group who scored above the mean on that scale would be described as "aggressive and persistent, as being persuasive and verbally fluent, as self-reliant and independent, and as having leadership potential and initiative."<sup>1</sup>

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<sup>1</sup>Harrison G. Gough, California Psychological Inventory Manual, (Palo Alto, California: Consulting Psychologists Press Inc., 1957), p. 12.



TABLE I

COMPARISON OF MAJORS IN GROUP I AND NON-MAJORS  
IN GROUP II ON CLASS ONE OF THE CPI

Scale	Mean	$\sigma_m^1$	$S_m^2$	Mean Scores		T-Scale Score		Difference	
				I	II	I	II	I	II
1 Do	24.32	6.86	3.83	24.48	24.28	51	50	+1	
2 Cs	23.35	5.11	3.02	22.62	23.50	49	50		+1
3 Sy	23.33	4.91	3.50	23.46	23.30	50	50		
4 Sp	33.59	5.53	2.87	32.97	33.72	49	50		+1
5 Sa	21.71	4.11	2.70	21.39	21.77	49	50		+1
6 Wb	31.38	7.61	4.02	31.41	31.37	50	50		

<sup>1</sup>Standard Deviation of the Mean

<sup>2</sup>Standard Error of the Mean

The mean on scale one was 24.32 with a standard deviation of 6.86 and a standard error of 3.63. The mean score for Group One was 24.48 with a standard deviation of 5.76 and a standard error of 3.05. The mean score for Group Two was 24.28 with a standard deviation of 7.07 and a standard error of 3.74. Group One had a T-scale score of fifty-one, and the T-scale score for Group Two was fifty. There was a difference of one point in favor of the majors. This may suggest that physical education majors tend to have higher qualities of dominance than do non-majors, which could indicate that initiative and leadership, as well as aggressiveness are developed through extensive participation in movement

experiences such as those found in sports and dance activities.

Scale two was a measure of capacity for status. The group who scored above the mean on scale two would be described as "ambitious, active, forceful, insightful, resourceful, versatile, and effective in communication."<sup>2</sup>

The mean on scale two was 23.35 with a standard deviation of 5.11 and a standard error of 3.02. The mean score for Group One was 22.62 with a standard deviation of 5.40 and a standard error of 3.05. The mean score for Group Two was 23.50 with a standard deviation of 5.03 and a standard error of 2.85. T-scale scores for the groups were forty-nine for Group One and fifty for Group Two. There was a difference of one point between the groups in favor of the non-majors, which may suggest that non-majors have a greater capacity for status than the majors do. Perhaps the reason for the difference was that of effectiveness in communication. On scale nineteen which was the ACT measure of English (reported later in the study), the majors scored five points below the non-majors. That scale measured usage, phraseology, style and organization. If effectiveness in communication is an indication of capacity for status, and majors are inferior to non-majors in communicative ability, then it might seem reasonable to assume that majors would be less adequate than

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<sup>2</sup>Ibid.

non-majors in capacity for status.

Scale three was a measure of sociability. The group who scored above the mean on scale three would be described as "outgoing, enterprising, ingenious, and competitive as well as original and fluent in thought."<sup>3</sup>

The mean for scale three was 23.33 with a standard deviation of 4.91 and a standard error of 3.50. The mean score for Group One was 23.46 with a standard deviation of 4.33 and a standard error of 2.33. The mean score for Group Two was 23.30 with a standard deviation of 5.02 and a standard error of 2.70. Group One had a T-scale score of fifty as did Group Two. Therefore, there was no difference between majors and non-majors in sociability. The investigator could think of no reason why this particular similarity between the two groups should exist unless it may be because both groups are a part of the total college population and the development of characteristics of sociability as it is described above are common and necessary for all successful college students.

Scale four was a measure of the social presence of the two groups. The group who scored above the mean on scale four would be seen as "clever, enthusiastic, imaginative, spontaneous, and talkative as well as active and vigorous."<sup>4</sup>

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<sup>3</sup>Ibid.

<sup>4</sup>Ibid.



The mean for scale four was 33.59 with a standard deviation of 5.53 and a standard error of 2.87. The mean score for Group One was 32.97 with a standard deviation of 5.83 and a standard error of 3.55. The mean score for Group Two was 33.72 with a standard deviation of 5.46 and a standard error of 3.32. T-scale scores for the two groups were forty-nine for Group One and fifty for Group Two. There was a one point difference in favor of the non-majors. The similarity between the results of scales four and two were interesting in that both scales measured qualities characteristic of individuals who participate in many social activities. If this is a true assumption, then the same inferences drawn for scale two could be applicable to scale four.

Scale five was designed to measure self-acceptance, which was described as "sense of personal worth and capacity for individual thinking and action."<sup>5</sup> The group who scored above the mean on scale five might be described as "outspoken, sharp-witted; as being persuasive and verbally fluent; and as possessing self-confidence and self-assurance."<sup>6</sup>

The mean on scale five was 21.71 with a standard deviation of 4.11 and a standard error of 2.70. The mean score of Group One was 21.39 with a standard deviation of 4.28 and a standard error of 2.30. For Group Two the mean

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<sup>5</sup>Ibid.

<sup>6</sup>Ibid.



score was 21.77 with a standard deviation of 4.07 and a standard error of 2.19. The T-scale scores were forty-nine for Group One and fifty for Group Two. There was a one point difference in favor of the non-majors which would seem to indicate that non-majors are higher in self-acceptance than majors.

Scale six was a measure of sense of well-being. The purpose of the scale was "to identify persons who minimize their worries and complaints, and who are relatively free from self-doubt and disillusionment."<sup>7</sup> The group who scored above the mean on scale six would be described as "energetic, enterprising, alert, ambitious, and versatile; as being productive and active and as valuing work and effort."<sup>8</sup>

The mean for scale six was 31.38 with a standard deviation of 7.61 and a standard error of 4.02. The mean for Group One was 31.41 with a standard deviation of 6.96 and a standard error of 3.68. The mean for Group Two was 31.37 with a standard deviation of 7.74 and a standard error of 4.10. The T-scale score for both groups was fifty which suggested that the two groups are similar in sense of well-being. As was the case on scale three, the writer was led to suppose that the reason the two groups were similar was

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<sup>7</sup>Ibid.

<sup>8</sup>Ibid.

because the characteristics measured were typical of most college women.

Class One of the CPI revealed that majors and non-majors were similar in poise, ascendance, and self-assurance, but that the non-majors were slightly superior in measures of capacity for status, social presence and self-acceptance. The majors were slightly superior on the measure of dominance.

#### Findings, Interpretations, and Implications of Class Two

Class Two of the CPI consisted of six scales which were designed to measure socialization, maturity, and responsibility. The six scales in Class Two were those of responsibility, socialization, self-control, tolerance, good impression, and communality. According to the coding system used by the investigator in computing the data, the numbers for the six scales in Class Two were seven through twelve in the order mentioned above in the listing of the names of the specific scales; i.e., number seven: responsibility.

The results of the data obtained on the six scales categorized as Class Two of the CPI may be seen in Table Two.

The specific measure of scale seven was responsibility. The group who scored above the mean on that scale would be described as "thorough, progressive, and independent, as being conscientious and dependable, resourceful and efficient, and as being alert to ethical and moral issues."<sup>9</sup>

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<sup>9</sup>Ibid.

TABLE II

COMPARISON OF MAJORS IN GROUP ONE AND NON-MAJORS  
IN GROUP TWO ON CLASS TWO OF THE CPI

Scale	Mean	$\sigma_m^1$	$S_m^2$	Mean Scores		T-Scale Score		Difference	
				I	II	I	II	I	II
7 Re	30.32	4.85	2.74	29.69	30.46	49	50		+1
8 So	36.74	8.09	4.36	36.48	36.80	50	50		
9 Sc	25.10	7.91	4.47	22.44	25.66	47	50		+3
10 To	20.76	6.32	3.94	20.37	20.84	49	50		+1
11 Gi	14.41	5.68	3.21	13.41	14.62	50	50		
12 Cm	23.70	6.08	3.16	24.74	23.49	50	50		

<sup>1</sup>Standard Deviation of the Mean

<sup>2</sup>Standard Error of the Mean

The mean for scale seven was 30.32 with a standard deviation of 4.85 and a standard error of 2.74. The mean score for Group One was 29.69 with a standard deviation of 4.18 and a standard error of 2.17. The mean score for Group Two was 30.46 with a standard deviation of 4.97 and a standard error of 2.58. T-scale scores for the two groups were forty-nine for Group One and fifty for Group Two. There was a one point difference in favor of the non-majors. It would be interesting to speculate whether the difference was due to the emphasis on play which exists as a part of physical education. If that were true, then it would seem that physical education majors have some difficulty in relating the learning of responsibility in movement experience to other situations.



Scale eight measured socialization which had as its purpose "to indicate the degree of social maturity, integrity, and rectitude which the individual had attained."<sup>10</sup> The group who scored above the mean would "tend to be seen as: serious, honest, industrious, modest, obliging, sincere and steady; as being conscientious and responsible; as being self-denying and conforming."<sup>11</sup>

The mean for scale eight was 36.74 with a standard deviation of 8.09 and a standard error of 4.36. The mean score for Group One was 36.48 with a standard deviation of 7.83 and a standard error of 4.36. The mean score for Group Two was 36.80 with a standard deviation of 8.15 and a standard error of 4.54. T-scale scores for both groups were fifty, which seemed to indicate that there was no difference in the socialization of the two groups.

Scale nine was a measure of self-control. The group who scored above the mean would be described as "calm, patient, practical, slow, self-denying, inhibited, thoughtful, and deliberate; as being strict and thorough in their own work and in their expectations for others."<sup>12</sup>

The mean for scale nine was 25.10 with a standard deviation of 7.91 and a standard error of 4.47. The mean score for Group One was 22.44 with a standard deviation of

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<sup>10</sup>Ibid.

<sup>11</sup>Ibid.

<sup>12</sup>Ibid.



7.50 and a standard error of 4.24. For Group Two the mean score was 25.66 with a standard deviation of 7.88 and a standard error of 4.46. Group One had a T-scale score of forty-seven while Group Two had a score of fifty. There was a difference between the groups of three points in favor of the non-majors, which seemed to indicate that physical education majors are somewhat lacking in self-control when compared to non-majors. That difference between the two groups is difficult to explain if one accepts the philosophy that movement experiences provide a healthy means of releasing tension and anxiety, because certainly physical education majors are exposed to more opportunities for expression through movement than are the non-majors.

Scale ten was a measure of tolerance designed to "identify persons with permissive, accepting and non-judgmental social beliefs and attitude."<sup>13</sup> The group scoring above the mean on scale ten might be referred to as "enterprising, informal, tolerant, clear-thinking, and resourceful; as being intellectually and verbally fluent; and as having broad and varied interests."<sup>14</sup>

The mean for scale ten was 20.76 with a standard deviation of 6.32 and a standard error of 3.94. The mean score for Group One was 20.37 with a standard deviation of

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<sup>13</sup>Ibid.

<sup>14</sup>Ibid.

9.50 and a standard error of 5.93. The mean score for Group Two was 20.84 with a standard deviation of 5.41 and a standard error of 3.38. The T-scale scores for the two groups were forty-nine for Group One and fifty for Group Two. Between the two groups there was a one point difference in favor of the non-majors, which would suggest that physical education majors are less tolerant than non-majors. If characteristics of dominance are not compatible with characteristics of tolerance, then that might account for the difference between the two groups, as scale one suggested that majors are more dominant than non-majors.

Scale eleven was designed "to identify persons who are capable of creating a good impression and are concerned about how others react to them."<sup>15</sup> The name of the scale was good impression, and the group who scored above the mean on this scale would be described as "cooperative, enterprising, outgoing, sociable, warm and helpful; as being concerned with making a good impression; and as being diligent and persistent."<sup>16</sup>

The mean for scale eleven was 14.41 with a standard deviation of 5.68 and a standard error of 3.21. Group One had a mean score of 13.41 with a standard deviation of 5.49 and a standard error of 3.11. For Group Two the mean score was 14.62 with a standard deviation of 5.70 and a standard error of 3.22.

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<sup>15</sup>Ibid.

<sup>16</sup>Ibid.

Both groups had a T-scale score of fifty, suggesting that each group had the same concern for making a good impression. Again, the writer thought that this similarity probably indicated that the students included in the study were responding in terms of their identification with the total college population, as the characteristics measured in scale eleven were indicative of the desire for personal improvement which causes an individual to seek higher learning.

Scale twelve was a measure of communality which was "to indicate the degree to which an individual's reactions and responses correspond to the modal ("common") pattern established for the inventory."<sup>17</sup> The group which scored above the mean on scale twelve would "tend to be seen as dependable, moderate, tactful, reliable, sincere, patient, steady, and realistic; as being honest and conscientious; and as having common sense and good judgment."<sup>18</sup>

The mean for scale twelve was 23.70 with a standard deviation of 6.08 and a standard error of 3.16. The mean for Group One was 24.74 with a standard deviation of 4.15 and a standard error of 3.11. For Group Two the mean score was 23.49 with a standard deviation of 6.39 and a standard error of 4.78. For both groups the T-scale score was fifty, suggesting that the communality of the two groups was similar. This was

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<sup>17</sup>Ibid., p. 13.

<sup>18</sup>Ibid.



probably due to the fact that most college students are "test oriented" after having taken entrance examinations and proficiency tests throughout high school and before entering college. Also, the testing environment for both groups was the same when the CPI was administered.

The results of the data for Class Two of the CPI revealed that majors and non-majors were similar in measures of socialization, maturity and responsibility, but that the non-majors were somewhat higher on scales seven and ten, specific measures of responsibility and tolerance. Non-majors were also slightly higher on scale nine, which was a measure of self-control. The two groups were identical in response to scales eight, eleven, and twelve which measured socialization, good impression, and communality. On no scale in Class Two did the majors score higher than the non-majors.

#### Findings, Interpretations, and Implications of Class Three

Class Three consisted of three scales numbered thirteen, fourteen, and fifteen according to the code used for this investigation. Those three scales were measures of achievement potential and intellectual efficiency, and were called achievement via conformance, achievement via independence, and intellectual efficiency.

The results of the data obtained from Class Three of the CPI are presented in Table Three.



Scale thirteen was a measure of "achievement via conformance to identify those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior."<sup>19</sup> The group who scored high on scale thirteen would tend to be seen as capable, cooperative, efficient, organized, responsible and sincere; as being persistent and industrious; and as valuing intellectual activity and achievement."<sup>20</sup>

TABLE III

COMPARISON OF MAJORS IN GROUP ONE AND NON-MAJORS  
IN GROUP TWO ON CLASS THREE OF THE CPI

Scale	Mean	$\sigma_m^1$	$S_m^2$	Mean Scores		T-Scale Score		Difference	
				I	II	I	II	I	II
13 Ac	25.61	4.96	2.67	24.37	25.87	47	51		+4
14 Ai	17.60	5.46	3.14	18.13	17.49	51	50	+1	
15 Ie	33.72	7.57	3.63	32.67	33.95	50	50		

<sup>1</sup>Standard Deviation of the Mean

<sup>2</sup>Standard Error of the Mean

The mean for scale thirteen was 25.61 with a standard deviation of 4.96 and a standard error of 2.67. The mean score for Group One was 24.37 with a standard deviation of 4.66 and a standard error of 2.42. The mean score for Group Two was 25.87 with a standard deviation of 4.98 and a standard

<sup>19</sup>Ibid.

<sup>20</sup>Ibid.

error of 2.59. The T-scale score for Group One was forty-seven and for Group Two was fifty-one. There was a four point difference between the two groups in favor of the non-majors, which would seem to imply that physical education majors are somewhat less willing to conform and place a lesser value on intellectual activity and achievement than the non-majors do. The lack of willingness to conform apparent in the majors was surprising since emphasis in sports is placed on cooperation and selflessness for the good of the team, particularly in competitive activities. Since the non-majors scored higher than the majors in capacity for status and social presence in class one of the CPI, perhaps a possible explanation for the superiority of the non-majors would be that in order to satisfy the need for social activities and social acceptance, conformity is necessary.

Scale fourteen was a measure of achievement via independence to identify those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors."<sup>21</sup> The group who scored above the mean on scale fourteen would be seen as "mature, forceful, strong, dominant, demanding, and foresighted; as being independent and self-reliant; and as having superior intellectual ability and judgment."<sup>22</sup>

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<sup>21</sup>Ibid.

<sup>22</sup>Ibid.

The mean for scale fourteen was 17.60 with a standard deviation of 5.46 and a standard error of 3.14. The mean score for Group One was 18.13 with a standard deviation of 9.40 and a standard error of 6.16. The mean score for Group Two was 17.49 with a standard deviation of 4.17 and a standard error of 2.73. Fifty-one was the T-scale score for Group One. Group Two had a T-scale score of fifty. There was a difference of one point in favor of the majors, which may suggest that the physical education majors achieve more readily in situations requiring autonomy and independence than do non-majors. Perhaps the difference on scales thirteen and fourteen serve to explain the interest and attitudes of each group toward achievement. The non-majors seem to excel in situations when conformity is essential. The majors are likely to perform better in situations demanding self-reliance.

Scale fifteen was a measure of intellectual efficiency "to indicate the degree of personal and intellectual efficiency which the individual has attained."<sup>23</sup> The group scoring above the mean on scale fifteen would probably be seen as "efficient, clear-thinking, capable, intelligent, progressive, and resourceful; as being well-informed; and as placing a high value on cognitive and intellectual matters."<sup>24</sup>

The mean for scale fifteen was 33.72 with a standard

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<sup>23</sup>Ibid.

<sup>24</sup>Ibid.



deviation of 7.57 and a standard error of 3.63. The mean score for Group One was 32.67 with a standard deviation of 7.66 and a standard error of 3.67. The mean score for Group Two was 33.95 with a standard deviation of 7.53 and a standard error of 3.61. Groups One and Two had a T-scale score of fifty, implying that the intellectual efficiency of the two groups was about the same. Perhaps this similarity can be explained by the fact that both groups are members of a college population where value is placed on cognitive and intellectual matters.

On Class Three of the CPI it was revealed that non-majors tend to achieve better than majors in situations where conformity is essential, but majors tend to achieve more readily than non-majors in situations where independence is necessary. The two groups scored the same on the measure of intellectual efficiency.

#### Findings, Interpretations, and Implications of Class Four

Class Four of the CPI consisted of three measures of intellectual and interest modes. The scales in Class Four were coded by numbers sixteen, seventeen, and eighteen. The results of the data for Class Four are presented in Table Four which shows the differences between the two groups on measures of psychological-mindedness, flexibility, and femininity, numbers sixteen, seventeen, and eighteen, respectively.



Scale sixteen was a measure of psychological-mindedness which was designed to "measure the degree to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others."<sup>25</sup> The group who scored above the mean on scale sixteen would tend to be seen as observant, spontaneous, quick, perceptive, talkative, resourceful and changeable; as being verbally fluent and socially ascendant; as being rebellious toward rules, restrictions, and constraints."<sup>26</sup>

TABLE IV

COMPARISON OF THE MAJORS IN GROUP ONE AND THE NON-MAJORS IN GROUP TWO ON CLASS FOUR OF THE CPI

Scale	Mean	$\sigma_m^1$	$S_m^2$	Mean Scores		T-Scale Score		Difference	
				I	II	I	II	I	II
16 Py	10.82	3.35	2.51	11.44	10.70	52	50	+2	
17 Fx	8.24	3.93	2.19	8.46	8.20	51	50	+1	
18 Fe	23.43	3.50	2.13	21.74	23.78	45	51		+6

<sup>1</sup>Standard Deviation of the Mean

<sup>2</sup>Standard Error of the Mean

The mean for scale sixteen was 10.82 with a standard deviation of 3.35 and a standard error of 2.51. The mean score for Group One was 11.44 with a standard deviation of 2.97 and a standard error of 2.12. The mean score for Group

<sup>25</sup>Ibid.

<sup>26</sup>Ibid.

Two was 10.70 with a standard deviation of 3.42 and a standard error of 2.44. T-scale score for Group One was fifty-two and for Group Two was fifty. Between the two groups there was a two point difference in favor of the majors, which may suggest that physical education majors are more psychologically-minded than non-majors. This difference would seem to be in conflict with the measures of social presence (Class One, Scale Four) and tolerance (Class Two, Scale Ten) on which the majors scored lower than the non-majors, but perhaps the difference is that the measure of scale sixteen was one of sensitivity to others, an outward manifestation of personality, whereas, scales four and ten measured more inward characteristics of personality.

Scale seventeen measured flexibility of thinking and social behavior. The group who scored above the mean on scale seventeen would be described as "informed, adventurous, confident, humorous, rebellious, idealistic, assertive, and egoistic; as being sarcastic and cynical; and as highly concerned with personal pleasure and diversion."<sup>27</sup>

The mean for scale seventeen was 8.24 with a standard deviation of 3.93 and a standard error of 2.19. The mean score for Group One was 8.46 with a standard deviation of 3.41 and a standard error of 1.96. The mean score for Group

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<sup>27</sup>Ibid.

Two was 8.20 with a standard deviation of 4.03 and a standard error of 2.32. The T-scale scores for Groups One and Two were fifty-one and fifty, respectively. Between the two groups there was a one point difference in favor of the majors, which seemed to indicate that physical education majors are more flexible in thinking and social behavior than non-majors are. A greater participation in activity could account for the majors' interest in adventure and diversion. The fact that the group who scored above the mean, as did the majors, might be described as rebellious and assertive seemed to be in agreement with the measures of achievement via independence (Class Three, Scale Fourteen) and dominance (Class One, Scale One), on which the majors also scored above the mean and, therefore, would be described as forceful, strong, dominant, and demanding.

Scale eighteen was a measure of femininity to assess the masculinity or femininity of interests. Scores above the mean would indicate more feminine interests; scores below the mean would indicate more masculine interests.

The mean for scale eighteen was 23.43 with a standard deviation of 3.50 and a standard error of 2.13. The mean score for Group One was 21.74 with a standard deviation of 3.40 and a standard error of 2.01. The mean score for Group Two was 23.78 with a standard deviation of 3.42 and a standard error of 2.02. The T-scale score for Group One was forty-five



and for Group Two was fifty-one. Between the two groups there was a difference of six points in favor of the non-majors, suggesting that non-majors are more feminine in interests than are majors. Because of the results of scales one (dominance), fourteen (achievement via independence), and seventeen (flexibility), on which the scores of the majors exceeded those of the non-majors, it was not surprising to find a difference between the two groups which indicated that physical education majors were less feminine than non-majors. However, it was surprising to find so great a difference between the two groups, because the majors included in this study are consistently encouraged to be feminine in dress and action.

#### Summary of the Findings of the CPI

On the CPI which was divided into four classes comprising eighteen scales, the following facts concerning majors in Group One and non-majors in Group Two were revealed in the findings:

Of the eighteen scales, the non-majors scored higher than the majors on scales two, four, five, seven, nine, ten, thirteen, and eighteen, which were measures of capacity for status, social presence, self-acceptance, responsibility, self-control, tolerance, achievement via conformance, and femininity, a total of eight scales.



On the same eighteen scales, the majors scored slightly higher than the non-majors on scales one, fourteen, sixteen, and seventeen, which were measures of dominance, achievement via independence, psychological-mindedness, and flexibility, a total of four scales.

The scores of the two groups were identical on the six remaining scales which were numbers three, six, eight, eleven, twelve, and fifteen, measures of sociability, sense of well-being, socialization, good impression, communality, and intellectual efficiency.

On the eighteen scales combined the majors scored a total of five T-scale scores more than the non-majors, and the non-majors scored a total of eighteen T-scale scores more than the majors, a total difference of thirteen T-scale points in favor of the non-majors. Therefore, the non-majors were found to have better personality adjustment than the majors, as determined by the CPI.

#### The Academic Ability of Physical Education

##### Majors and Non-Majors

The basic test battery of the ACT consists of four tests<sup>28</sup>: English which measures the student's understanding

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<sup>28</sup>The American College Testing Program, Technical Report (U. S. A.: Science Research Associates, 1960), p. 5.

and use of the basic elements in correct and effective writing, mathematics which measures the student's general mathematical reasoning ability, social studies which measures the student's ability to handle the types of evaluative reasoning and problem solving skills required in the social studies, and the natural sciences which measure the student's ability to handle critical reasoning and problem-solving skills required in the natural sciences. A fifth score called the composite is the arithmetic mean of the four scaled scores mentioned above. Data showing the differences in the academic ability of the majors and non-majors was organized into scales corresponding to the five scores of the ACT.

#### Findings, Interpretations, and Implications of the ACT

The five scales of the ACT were code-numbered as follows: English: number nineteen, mathematics: number twenty, social studies: number twenty-one, natural sciences: number twenty-two, and composite: number twenty-three. The results of the data for the five scales of the ACT are shown in Table Five.

Scale nineteen was the measure of English which included punctuation, capitalization, usage, diction, phraseology, style, and organization.

The mean for scale nineteen was 19.97 with a standard deviation of 4.08 and a standard error of 1.41. The mean

score for Group One was 18.37 with a standard deviation of 3.41 and a standard error of 1.36. The mean score for Group Two was 20.30 with a standard deviation of 4.13 and a standard error of 1.65. Group One had a T-scale score of forty-six and Group Two had a T-scale score of fifty-one. Between the two groups there was a difference of five points in favor of the non-majors, suggesting that non-majors are superior to the majors in the communicative skills related to English. This would seem to imply a lack of correlation between the communicative skills of movement as found in physical education and the verbal and written communicative skills in other areas.

TABLE V  
COMPARISON OF THE PHYSICAL EDUCATION MAJORS IN  
GROUP ONE AND THE NON-MAJORS IN  
GROUP TWO ON THE ACT

Scale	Mean	s <sub>m</sub> <sup>1</sup>	S <sub>m</sub> <sup>2</sup>	Mean Scores		T-Scale Score		Difference	
				I	II	I	II	I	II
19 Eng.	19.97	4.08	1.41	18.37	20.30	46	51		+5
20 Math.	15.83	4.81	1.66	15.20	15.96	49	50		+1
21 S. S.	18.29	4.89	1.89	17.79	18.40	49	50		+1
22 N. S.	17.18	4.81	1.98	17.18	17.18	50	50		
23 Comp.	17.84	3.83	0.94	17.27	17.96	48	50		+2

<sup>1</sup>Standard Deviation of the Mean

<sup>2</sup>Standard Error of the Mean



Scale twenty was the measure for mathematics which emphasized the solution of practical quantitative problems and formal mathematical techniques.

The mean for scale twenty was 15.83 with a standard deviation of 4.81 and a standard error of 1.66. The mean score for Group One was 15.20 with a standard deviation of 4.51 and a standard error of 1.75. The mean score for Group Two was 15.96 with a standard deviation of 4.86 and a standard error of 1.89. T-scale scores were forty-nine for Group One and fifty for Group Two. There was a difference of one point in favor of the non-majors. The difference between the two groups would seem to indicate that non-majors are slightly superior to majors in mathematics. An implication might be drawn that non-majors have somewhat greater abstract reasoning power than do majors because ability to solve mathematical problems is often said to be indicative of abstract reasoning power. Perhaps that difference is due to the fact that most of the emphasis on reasoning in physical education is found in a sport or game situation which often seems less abstract than that found in other areas. One exception to that is found in contemporary dance composition which requires practical but abstract problem-solving ability in terms of space, time, and idea organization. That physical education majors are participants in contemporary dance courses would not tend to be of value in distinguishing them from the non-



majors in this study, because the same course is required of all freshman and sophomore women. Had that not been the case, it would seem feasible that the data might have revealed a different result in which the majors would have at least been equal to the non-majors.

Scale twenty-one was a measure for social studies based primarily on representative reading passages, understanding of basic concepts and knowledge of sources of information concerning social studies.

The mean for scale twenty-one was 18.29 with a standard deviation of 4.89 and a standard error of 1.89. The mean score for Group One was 17.79 with a standard deviation of 4.37 and a standard error of 1.64. The mean score for Group Two was 18.40 with a standard deviation of 4.99 and a standard error of 1.87. The T-scale scores for the two groups were forty-nine for Group One and fifty for Group Two. There was a one point difference in favor of the non-majors, which seemed to indicate that the non-majors were slightly superior to the majors in social studies. This difference, if the score was effected by interest, would be in keeping with the difference found in the majors and non-majors on Class One, scale three and Class Two, scale ten which were the measures of sociability and tolerance in the CPI. It would seem logical that if the majors were not interested in people and tolerant of people, then they would not be likely to enjoy the study

of people and societies as they are treated in social studies.

Scale twenty-two was a measure for natural sciences which placed an emphasis on the formulation and testing of hypotheses, and the evaluation of reports of scientific experiments.

The mean for scale twenty-two was 17.18 with a standard deviation of 4.81 and a standard error of 1.98. The mean score for Group One was 17.18 with a standard deviation of 4.40 and a standard error of 1.76. The mean score for Group Two was 17.18 with a standard deviation of 4.90 and a standard error of 1.96. T-scale scores for both groups were fifty, which suggested that the two groups were the same in response to the scale of natural science. Since the non-majors scored higher than the majors on all scales of the ACT with the exception of scale twenty-two, it would seem logical that they would be equal to the majors on scale twenty-two. Physical education majors work often in game situations which require analysis, experimentation, and evaluation. Scale twenty-two was one which required the same type of cognitive ability. Therefore, that may account for the reason why the majors' score equaled that of the non-majors.

Scale twenty-three was the composite or the arithmetic mean of the four scaled scores which were previously discussed.

The mean for scale twenty-three was 17.84 with a standard deviation of 3.83 and a standard error of .94. The

mean score for Group One was 17.27 with a standard deviation of 3.17 and a standard error of .78. The mean score for Group Two was 17.96 with a standard deviation of 3.95 and a standard error of .97. The T-scale score for Group One was forty-eight and the T-scale score for Group Two was fifty. Between the two groups there was a difference of two points in favor of the non-majors, which suggested that the over-all or composite academic ability of non-majors was superior to that of the majors. The result of scale twenty-three would be expected and logical since the non-majors scored higher than the majors on three scales, and scored equally with the majors on the fourth scale.

The ACT revealed that non-majors are superior to the majors in English, mathematics, and social studies; the majors and non-majors are equal in the natural sciences; and that the composite academic ability of non-majors is higher than that of the majors.

The Motor Ability of Physical Education  
Majors and Non-Majors

The short battery of the SMA consists of three tests:<sup>29</sup>

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M. Gladys Scott and Esther French, Evaluation in Physical Education, (St. Louis: The C. V. Mosby Company, 1950), pp. 206, 207.

the obstacle race which measures a person's ability to remember directions and to adjust for the next movement while still performing a preceeding one, and puts a premium on weight control, balance, total body coordination and agility; the standing broad jump which measures an understanding of the use of effort and balance with respect to one's own body movement and puts a premium on leg strength and coordination of arms and legs; and the basketball throw for distance which measures understanding of the use of effort with respect to some other object, and involves strength of shoulder girdle, coordination of body and arms, and ball handling. A fourth score called the composite is based on the weighted scores of the three tests just described. Data showing the differences in the motor ability of the majors and non-majors was organized into scales corresponding to the four scores found on the SMA.

#### Findings, Interpretations, and Implications of the SMA

The four scales of the SMA were code-numbered as follows: obstacle race: number twenty-four, broad jump: number twenty-five, basketball throw: number twenty-six, and composite: number twenty-seven.

The results of the data for the four scales of the SMA are shown in Table Six.

Scale twenty-four was the obstacle race which was



measured in seconds. Since the race was timed, a low score indicated a good performance.

TABLE VI  
COMPARISON OF THE PHYSICAL EDUCATION MAJORS IN  
GROUP ONE AND THE NON-MAJORS IN GROUP TWO  
ON THE SMA

Scale	Mean	$\sigma_m^1$	$S_m^2$	Mean Scores		T-Scale Scores		Difference	
				I	II	I	II	I	II
24 Or <sup>3</sup>	23.96	2.85	8.55	21.80	24.41	41	56	+15	
25 Bj	86.27	12.21	5.59	93.70	84.69	56	49	+7	
26 Bb	81.64	20.96	6.95	100.27	77.71	59	48	+11	
27 Com.	142.74	30.18	14.47	167.32	137.55	55	48	+7	

<sup>1</sup>Standard Deviation of the Mean

<sup>2</sup>Standard Error of the Mean

<sup>3</sup>Scale twenty-four was an obstacle race with timed scores. Therefore, a low score was more desirable than a high score.

The mean for scale twenty-four was 23.96 with a standard deviation of 2.85 and a standard error of 8.55. The mean score for Group One was 21.80 with a standard deviation of 2.31 and a standard error of .69. The mean score for Group Two was 24.41 with a standard deviation of 2.75 and a standard error of .83. The T-Scale score for Group One was forty-one and the T-Scale score for Group Two was fifty-six. Between the two groups there was a difference of fifteen points, in favor of the majors. As stated above the lower score indicated the better performance. The implication of scale twenty-four

was that majors are greatly superior to non-majors in movement situations which require the ability to remember directions and to adjust for the next movement while still performing a preceeding one. A further implication was that the physical education majors have better weight control, balance, agility, and total body coordination than do the non-majors. That difference between the two groups might be expected since physical education majors have greater opportunities for movement experience than do the non-majors. Also, it is probable that most students who have found themselves lacking in those factors of motor ability measured by the obstacle race would not choose physical education as their major.

Scale twenty-five was the broad jump, measured in inches. The mean for scale twenty-five was 86.27 with a standard deviation of 12.21 and a standard error of 5.59. The mean score for Group One was 93.70 with a standard deviation of 11.80 and a standard error of 5.40. The mean score for Group Two was 84.69 with a standard deviation of 11.70 and a standard error of 5.36. The T-scale score for Group One was fifty-six and the T-scale score for Group Two was forty-nine. Between the two groups there was a difference of seven points in favor of the majors, which suggested that majors were somewhat superior to the non-majors in performance of the standing broad jump. This implied that majors have

greater understanding of the use of effort and balance with respect to their own bodies, as well as greater leg strength and coordination of arms and legs. This difference is probably due to more participation in active movement situations on the part of the majors which would tend to increase strength and coordination in addition to knowledge of what constitutes efficient movement.

Scale twenty-six was the basketball throw and the length of the throw was measured in feet. The mean for scale twenty-six was 81.64 with a standard deviation of 20.96 and a standard error of 6.95. The mean for Group One was 100.27 with a standard deviation of 21.70 and a standard error of 7.20. The mean for Group Two was 77.71 with a standard deviation of 18.80 and a standard error of 6.24. The T-scale score for Group One was fifty-nine. The T-scale score for Group Two was forty-eight. Between the two groups there was a difference of eleven points in favor of the majors, which implied that majors were superior to the non-majors in ability to throw a basketball for distance. Since scale twenty-five was based on strength of shoulder girdle, ball handling, and coordination of body and arms, the knowledge required for successful performance was that of the use of effort with respect to some other object. It is likely that majors have participated more than non-majors in activities which require that particular

knowledge and those same activities would then tend to strengthen the muscles involved as well as increase coordination.

Scale twenty-seven was a composite score of the SMA based on the measures of the obstacle race, broad jump, and the basketball throw.

The mean for scale twenty-seven was 142.74 with a standard deviation of 30.18 and a standard error of 14.47. The mean score for Group One was 167.37 with a standard deviation of 30.57 and a standard error of 11.02. The mean score for Group Two was 137.55 with a standard deviation of 27.40 and a standard error of 9.88. The T-scale score for Group One was fifty-five and for Group Two the score was forty-eight. Between the two groups there was a difference of seven points in favor of the majors, which was to be expected since the majors' scores had exceeded those of the non-majors on all three measures of motor ability. The difference on scale twenty-seven implied that majors are somewhat superior to non-majors in motor ability as determined by the SMA.

#### Summary of the Findings

There were three tests comprised of twenty-seven scales used to determine the differences existent in the academic ability, motor ability, and personality adjustment



of physical education majors and non-majors.

The CPI, which was the test used for determining personality adjustment yielded scores on eighteen scales. The following findings were revealed.

1. Majors are slightly superior to non-majors in dominance, achievement via independence, psychological mindedness, and flexibility, a total of four scales.

2. Majors are equal to non-majors in sociability, sense of well-being, socialization, good impression, communality, and intellectual efficiency, a total of six scales.

3. Majors are somewhat inferior to non-majors in capacity for status, social presence, self-acceptance, responsibility, self-control, tolerance, achievement via conformance, and femininity, a total of eight scales.

4. The personality adjustment of non-majors was superior to that of physical education majors by a total of thirteen T-Scale points.

The ACT, which was the test used for determining academic ability yielded scores on five scales. The following findings were revealed:

5. Majors were equal to the non-majors in the natural sciences.

6. Majors were not superior to the non-majors on any of the five scales.

7. The non-majors were markedly superior to the majors

in English, and slightly superior in mathematics, social studies, and on the composite scale which was the arithmetic mean of the other four scales.

8. The academic ability of the non-majors was somewhat superior to that of the majors.

The SMA, which was the test used for determining motor ability yielded scores on four scales. The following findings were revealed:

9. Majors were markedly superior to non-majors in running an obstacle race, slightly superior in performing a standing broad jump, a basketball throw for distance, and on a composite score of each test in the battery.

10. In no aspect of motor ability measured by the SMA were the non-majors superior or equal to the majors.

11. The motor ability of the majors was somewhat superior to that of the non-majors.

In summary, majors were superior slightly to non-majors in motor ability and non-majors were somewhat superior to majors in personality adjustment and academic ability as measured by the SMA, CPI, and ACT.

## CHAPTER IV

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

In an effort to extend research aimed toward effective teacher selection, a study was made to determine the differences existent between the academic ability, motor ability, and personality adjustment of students majoring in physical education and undergraduate students majoring in other fields of education. The purpose of the study was to determine the quality of students who have chosen to major in physical education at Sam Houston State Teachers College, Huntsville, Texas.

#### Summary of the Study

Terms peculiar to this research undertaking were defined and related studies were reviewed and discussed with relevance to the present study. Criteria for the selection of tests were established, and tests of academic ability, motor ability, and personality adjustment were selected on the basis of the established criteria. The tests selected for use in the present study were the American College Test (ACT) for determining academic ability, the Scott Motor Ability Test (SMA) for determining motor ability, and the California Psychological Inventory (CPI) for determining personality adjustment.

The total population of freshman and sophomore physical education majors were included in the study, a sample of forty-three students in Group One. Group Two, the non-majors, was comprised of a sample of 204 students who were enrolled in activity physical education courses which met three times per week. That number (204) was approximately one-half of the total population of freshman and sophomore women enrolled at Sam Houston State Teachers College.

The tests of motor ability and personality adjustment were administered to the two groups during the regularly scheduled instructional period for physical education. Scores on the test of academic ability were obtained from the Guidance and Testing Department at Sam Houston State Teachers College.

The data were computed to determine the differences existent between the majors and non-majors in the study. The data showing the differences between the two groups were organized into scales which were given code numbers. Scales for the CPI were numbered one through eighteen. Scales for the ACT were numbered nineteen through twenty-three. Scales for the SMA were numbered twenty-four through twenty-seven.

The interpretations and implications based on the results of the data indicated that the academic ability and personality adjustment of the non-majors were superior to that of the majors, and that the motor ability of the majors



was superior to that of the non-majors.

### Summary of the Findings

Findings revealed by the CPI indicated that physical education majors are slightly below the non-majors in capacity for status, social presence, self-acceptance, responsibility, self-control, tolerance, achievement via conformance, and markedly below non-majors in femininity. The physical education majors were slightly higher than the non-majors in dominance, achievement via independence, psychological mindedness, and flexibility. The physical education majors were the same as the non-majors in socialability, sense of well-being, socialization, good impression, communality, and intellectual efficiency.

Findings revealed by the ACT indicated that the physical education majors are markedly below the non-majors in English, slightly below the non-majors in mathematics, social studies, and the same as the non-majors in the natural sciences. The composite score for the majors was lower than the composite score for the non-majors.

Findings revealed by the SMA indicated that physical education majors are markedly above the non-majors in ability to run an obstacle race, slightly above the non-majors in performance of the standing broad jump, and basketball throw for distance, and higher than the non-majors on a composite score of motor ability.

### Conclusions of the Study

The findings on the tests of personality adjustment, academic ability, and motor ability seem to reveal that there may be a relationship between the performance of the physical education majors on scales of the CPI, ACT, and SMA.

The scores of the majors were below those of the non-majors in capacity for status, social presence, and self-acceptance. High scores on these scales are characteristic of individuals who are verbally fluent and effective in communication. The measure of English on the ACT was indicative of verbal fluency and effectiveness in communication, and the majors scored lower than the non-majors. It would seem reasonable to conclude that a reason for the majors' apparent lack of capacity for status, social presence, and self-acceptance may be a weakness in verbal ability and communicative effectiveness.

Majors scored higher than non-majors on the scales of dominance, psychological mindedness, achievement via independence and flexibility. Individuals scoring high on those scales tend to be independent, adventurous, rebellious, and self-reliant. They tend to have a sensitivity to other people and the potential for leadership. Physical education activities such as dance include situations which require the use of initiative and self-reliance and provide opportunities for independence and leadership. For example, in

dance composition a student may independently create movement patterns for other students to perform. In order to achieve the best results she must provide leadership in teaching the movement while at the same time being sensitive to the abilities and feelings of the other students. That sensitivity may at times require flexibility in the treatment of the original idea of the composition. Therefore, a possible explanation for the higher scores of the majors may be that participation in physical education develops leadership, self-reliance, and sensitivity to other people. On the other hand, individuals who are independent, self-reliant, and adventurous may be more likely to choose to major in physical education than those who possess the same personality traits to a lesser degree.

In either case, there would seem to be a relationship between the choice of the profession of physical education and personality characteristics of dominance, flexibility, psychological mindedness, and achievement via independence.

The physical education majors were slightly lower than the non-majors in responsibility, tolerance, self-control, and achievement via conformance and markedly lower in femininity. The characteristics associated with responsibility, self-control, tolerance, and achievement via conformance were those of cooperativeness, organization, and clear-thinking. Those descriptive terms might also be used with reference to



the over-all maturity of an individual. If the reference were to the maturity of the individuals comprising the physical education major group, then a possible explanation for lower scores made by the majors would be that physical education majors are not as mature and lack the sense of social responsibility found in the non-majors.

The terms such as out-going, blunt, and ambitious used in describing the individuals who made low scores on the femininity scale might provide a reasonable explanation for the apparent lack of femininity in the majors. The majors' scores were slightly higher than the non-majors on the scales of dominance and independence which were described as characteristic of strength, aggressiveness, and forcefulness. If there is a relationship between these characteristics and those terms used to describe individuals who made low scores on the scale of femininity, then it would seem very likely that the aggressiveness of the majors might be identified as a lack of femininity, especially since individuals who scored high on the scale were described as patient, helpful, and gentle. Therefore, it would seem reasonable to conclude that the lower score of the majors in femininity was due to personality traits characteristic of dominance and aggressiveness rather than to masculinity of interests.

The findings of the CPI revealed that in sociability, sense of well-being, socialization, good impression,



communality, and intellectual efficiency the majors and non-majors were the same. Since these scales were descriptive of individuals with high ideals, ambition, and desire for improvement, a logical implication seemed to be that these scales may have measured characteristics applicable to most college women. If that were true, then the conclusion would be that majors and non-majors seem to have in common personality traits of sociability, sense of well-being, socialization, good impression, communality, and intellectual efficiency as measured by the CPI.

On three scales of the ACT, English, mathematics, and social studies, there was a difference between the two groups suggesting that majors were below non-majors in academic ability. That difference could have been due to a difference in the high school background of the two groups, although that aspect was not taken into consideration in this study. But if more of the majors came from small high schools and more non-majors came from large high schools, then there is a possibility that the size of the school might make a difference in the curricular offerings which in turn might affect the academic ability of the two groups. Another possibility is that a misconception about physical education concerning its academic status could have caused less academically inclined students to select physical education as a major, whereas the same misconception could cause more

gifted students to select some other field as a major. In either case, the findings seem to indicate that the physical education majors in this study were less academically gifted than the non-majors on scales of English, mathematics, social studies, and a composite scale based on the arithmetic mean of the four scales.

On the scale of natural science the majors were the same as the non-majors, which could have been due to the increased emphasis on science which seems to have been in effect since the advent of the "Space Age." Also, since the scale measured ability to evaluate hypotheses and reach conclusions based on the report of experiments, the majors may have scored as high as the non-majors because of greater amounts of participation in movement experiences which demand the same type of cognitive activity. Such experiences are provided in dance and game situations which present movement problems for the student to solve.

The results of the ACT on the whole, however, seem to indicate that students who elect physical education as a major are somewhat academically inferior to those students who elect other major fields of endeavor.

The findings of the SMA revealed that majors were markedly superior to the non-majors on the obstacle race, and superior to the non-majors on the standing broad jump and the basketball throw for distance as well as on the composite

score of motor ability. That difference could have been due to a clearer understanding of the majors as to the movement problem presented in each test. Also, if more participation in physical education activities leads to increased strength, coordination, and insight for the solution of movement problems, then the physical education majors would be expected to score higher than the non-majors because majors tend to participate in more physical education activities. On the other hand, interest and motivation may have affected the scores of the two groups, because majors tend to enjoy competition and movement challenges as evidenced by their desire to make a career of physical education, whereas, the non-majors' interests would be more likely to center in other academic areas.

Similarly, it would seem probable that students who have superior strength and coordination as well as movement experience would be more likely to choose physical education as a major than would students who were lacking in coordination and the other factors of motor ability measured by the SMA.

Whatever the reason, the findings seem to indicate that it would be logical to assume that the motor ability of non-majors is inferior to that of majors.

### Summary of the Conclusions

On the basis of the findings of the tests of academic ability, motor ability, and personality adjustment the following conclusions seem to be justifiable:

1. That physical education majors may lack verbal ability and communicative effectiveness which would seem to affect personality adjustment in capacity for status, social presence, and self-acceptance.

2. That there seems to be some relationship between the choice of physical education as a major and the personality characteristics of dominance, flexibility, psychological mindedness, and achievement via independence.

3. That majors seem to lack the maturity and sense of social responsibility found in the non-majors on measures of responsibility, tolerance, self-control and achievement via conformity.

4. That the apparent lack of femininity found in the physical education majors could be due to conflicting personality traits of dominance and aggressiveness and therefore, lack of femininity should not necessarily be interpreted as evidence of masculinity.

5. That characteristics of personality adjustment common to women college students regardless of major field of interest may be those of sociability, sense of well-being,



socialization, good impression, communality, and intellectual efficiency.

6. That the over-all personality adjustment of majors in physical education seems to be slightly but not significantly lower than that of non-majors.

7. That majors in physical education seem to be somewhat less academically competent than non-majors in the areas of English, mathematics, and social studies.

8. That the ability of majors and non-majors seems to be the same in the natural sciences.

9. That the over-all academic ability of physical education majors seems to be somewhat below that of the non-majors as indicated by a composite score on the ACT.

10. That physical education majors seem to be more capable than non-majors in solving movement problems which require the use of large bodily movements, coordination of arms and legs, and manipulation of an exterior object, such as a ball.

11. That the motor ability of the majors in physical education seems to be significantly higher than that of the non-majors on measures of an obstacle race, a standing broad jump, and a basketball throw for distance.

12. That, in summary, the academic ability and personality adjustment of physical education majors seem to be lower than the academic ability and personality adjustment

of the non-majors, and that the motor ability of the majors seems to be higher than that of the non-majors.

### Recommendations of the Study

The following recommendations were submitted on the basis of the findings and conclusions:

1. That if physical education is to maintain its status as an academic discipline, then more emphasis must be put on certain areas of academic endeavor, particularly verbal and communicative skills in which physical education majors seemed to be less apt than majors in other areas of education.
2. That physical education majors should be encouraged to develop self-control, tolerance, and responsibility through physical education activities which provide opportunity for that particular type of development, such as team sports and dance activities.
3. That physical education majors be encouraged to find a balance between the aggressiveness and dominance which seem to be necessary for competition and leadership and factors of femininity such as gentleness, patience, and helpfulness.
4. That the over-all personality adjustment of physical education majors should be assessed periodically and counseling be provided for those students who seem to have specific

personality problems.

5. That a continuation of the present program for the development of motor ability in the majors would seem desirable, and that some type of program for the development of motor ability in non-physical education majors should be initiated to provide more opportunities for the learning and application of principles of efficient bodily movement.

6. That a screening program might be initiated wherein the curricular activities of each non-major student enrolling in activity physical education would be determined by individual strengths and weaknesses in knowledge and ability to apply sound principles of efficient movement.

#### Recommendations for Future Studies

The results of this study seemed to indicate a need for further research in several aspects of physical education directly related to academic ability, motor ability, and personality adjustment. The following studies are recommended:

1. A comparison of the academic, motor and personality status of the majors and non-majors at Sam Houston State Teachers College with national norms which have been established for the ACT, CPI, and SMA.

2. An extension of the present study to include a follow-up comparison of the two groups in academic ability,

motor ability, and personality adjustment after they have completed two additional years of college work.

3. A study of the high school backgrounds of the students in each group to determine to what extent high school curricula vary and whether that variance seems to have a significant effect on factors of personality adjustment, motor ability, and academic ability.

4. A study of the socio-economic backgrounds of the individuals in each group to determine whether that factor has a significant effect on the academic ability, motor ability, and personality adjustment of the two groups.

5. A study to determine and contrast the values, interests, and career ambitions of the individuals who comprised each of the groups.

6. A study to devise a screening program for the purpose of determining what levels of personality adjustment, motor ability, and academic capacity are necessary for effective physical education teaching in order to implement present teacher selection programs.

7. A study to determine interrelationships between factors of academic ability, motor ability, and personality adjustment with implications for effective teacher selection.

8. A study to determine whether a concentrated program of fundamental movement would have greater effects on the development of motor ability in both majors and



non-majors than a program comprised of the generally recognized physical education activities.

## BIBLIOGRAPHY

## BIBLIOGRAPHY

### Books

- American Association of Health Physical Education and Recreation. Measurement and Evaluation Materials in Health, Physical Education and Recreation. Washington, D. C.: American Association of Health Physical Education and Recreation, 1950.
- American Association of School Administration. "The Platform." 1947.
- Broer, Marion. Efficiency of Human Movement. Philadelphia: W. B. Saunders Company, 1960.
- Bovard, John F., Frederick W. Cozens and E. Patricia Hagman. Tests and Measurements in Physical Education. Philadelphia: W. B. Saunders Company, 1949.
- Burros, Oscar Krisen (ed.). The Third Mental Measurements Yearbook. New Brunswick: Rutgers University Press, 1949.
- \_\_\_\_\_. The Fourth Mental Measurements Yearbook. Highland Park: The Gryphon Press, 1953.
- \_\_\_\_\_. The Fifth Mental Measurements Yearbook. Highland Park: The Gryphon Press, 1959.
- Cassidy, Rosalind. New Directions in Physical Education for the Adolescent Girl. New York: A. S. Barnes and Company, 1938.
- Clark, H. Harrison. The Application of Measurement to Health and Physical Education. New York: Prentice-Hall, Inc., 1959.
- Davis, Elwood C. and Earl L. Wallis. Toward Better Teaching in Physical Education. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961.
- Forsythe, Charles E. and Ray O. Duncan. Administration of Physical Education. New York: Prentice-Hall, Inc., 1951.
- Glassow, Ruth B. and Marion Broer. Measuring Achievement in Physical Education. Philadelphia: W. B. Saunders Co., 1938.

- Heynes, Roger. The Psychology of Personal Adjustment. New York: Henry Holt and Company, Inc., 1962.
- McCloy, C. H. Tests and Measurements in Health and Physical Education. New York: F. S. Crofts and Co., 1942.
- Meyers, Carlton R. and F. Erwin Blesh. Measurement in Physical Education. New York: The Ronald Press Company, 1962.
- Mowrer, O. H. and C. Kluckhohn. "Dynamic Theory of Personality," Personality and Behavior Disorders. New York: Ronald Press, 1944.
- Montague, Ashley. Education and Human Relations. New York: Grove Press, Inc., 1958.
- Scott, M. Gladys and Esther French. Evaluation in Physical Education. St. Louis: The C. V. Mosby Company, 1950.
- Thorndike, Robert L. and Elizabeth Hagen. Measurement and Evaluation in Education and Psychology. New York: John Wiley and Sons, Inc., 1955.
- Weiss, Raymond A. and Marjorie Phillips. Administration of Tests in Physical Education. St. Louis: The C. V. Mosby Company, 1954.
- Willgoose, Carl E. Evaluation in Health Education and Physical Education. New York: McGraw-Hill Book Company, Inc., 1961.
- Williams, Jesse Feiring, Clifford Brownell and Elmon Vernier. The Administration of Health Education and Physical Education. Philadelphia: W. B. Saunders Company, 1958.

#### Periodicals

- Biddulph, Lowell G. "Athletic Achievement and the Personal and Social Adjustment of High School Boys," The Research Quarterly, XXV (March, 1954), 146-149.
- Garfiel, Evelyn. "The Measurement of Motor Ability," Archives of Psychology, VI (1923), p. 62.
- Humiston, Dorothy. "A Measurement of Motor Ability in College Women," The Research Quarterly, VIII (May, 1937), pp. 181-185.



- Keogh, Jack. "Relationship of Motor Ability and Athletic Participation in Certain Standardized Personality Measures," The Research Quarterly, XXX (December, 1959), pp. 438-445.
- McCloy, C. H. "Measurement of General Motor Capacity and General Motor Ability," Supplement to The Research Quarterly, V (March, 1934), pp. 60-63.
- Merriman, J. Burton. "The Relationship of Personality Traits to Motor Ability," Dissertation Abstracts, XX (July-December, 1959), pp. 950-951.
- Scott, M. Gladys. "The Contribution of Physical Activity to Psychological Development," The Research Quarterly, IXX (November, 1948), pp. 307-317.
- Shaffer, Laurance F. "The California Psychological Inventory," Journal of Consulting Psychology, XXI (August, 1957), p. 357.
- Smith, Frank. "If We Want Better Teaching," Nations Schools, IXX (June, 1937), pp. 35-36.
- Sperling, Abraham P. "The Relationship Between Personality Adjustment and Achievement in Physical Education Activities," The Research Quarterly, XIII (October, 1942), pp. 351-363.

#### Unpublished Material

- Hurst, Virginia. "Practices of Teacher Selection." Unpublished Master's thesis, Sam Houston State Teachers College, Huntsville, Texas, 1952.
- Shirley, Jack Harold. "A Comparative Study of Academic Achievement, Interests, and Personality Traits of Athletes and Non-Athletes." Unpublished Doctorate dissertation, The University of Oklahoma, Norman, Oklahoma, 1960.
- Williams, Hilda Lee. "A Survey of Studies Related to Measurement of Sports Skills and Motor Learning." Huntsville, Texas: A Research Report, 1963. (Mimeographed.)

Manuals

American College Testing Program, Professional Staff.  
Technical Report 1960-61 Edition, United States of  
America: Science Research Associates for the American  
College Testing Program, Inc., 1960.

Gough, Harrison G. California Psychological Inventory Manual,  
Palo Alto: Consulting Psychologists Press, Inc., 1960.

Vita was removed during scanning