THE DEVELOPMENT OF AN AUDIOVISUAL INTEREST INVENTORY

DISSERTATION

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By

Jerry Jack Roberts, B.S., M. Ed.

Denton, Texas

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The purpose of this study was to develop and field test an audiovisual interest inventory suitable for use in group testing situations where known or suspected reading disabilities are extant in testees. The Strong-Campbell Interest Inventory was selected for use as a model in developing the audiovisual instrument.

The audiovisual instrument developed for the study consisted of a slide-tape presentatiaon. The slides and corresponding tapes represented visually and verbally each of the 325 statements on the Strong-Campbell Interest Inventory. The degree of accuracy of the representation was approximately 95 per cent, according to a panel of judges convened to review the audiovisual materials prior to field testing.

Field testing of the audiovisual interest inventory was accomplished with a sample of fifty-seven eighth grade students. The students were administered the Strong-Campbell Interest Inventory, followed two weeks later by the audiovisual interest inventory. Standard Strong-Campbell answer sheets were used in both cases. The answer sheets were computer scanned and interest profile sheets were generated. The

twenty-three basic interest scale scores on each student's profile sheet for both the Strong-Campbell and the audio-visual interest inventories were isolated. A Pearson correlation coefficient (r) was calculated to determine the degree of correlation between the two sets of scores.

The correlations were then divided into two groups. Group I consisted of thirty-four correlations of students exhibiting recent Iowa Test of Basic Skills reading comprehension scores at or above the fiftieth percentile. Group II consisted of twenty-three correlations of students exhibiting reading comprehension scores below the fiftieth percentile.

The mean of group I correlations was .80 r, while the mean of group II correlations was .75 r. The .05 r difference was found to be insignificant when subjected to a directional t test at the .05 level of significance.

Subjective data, summarized from anecdotal notes compiled by the classroom teacher and test administrator during field testing of the instruments used in the study indicated a much lower degree of student resistance to testing with the audiovisual instrument than with the Strong-Campbell instrument. Additionally, student attention to task and general behavior was noticeably improved when using the audiovisual instrument.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The development of the tools and techniques of vocational counseling has closely paralleled other twentieth-century developments in the social sciences. While remaining relatively dormant prior to World War I, post-war development of psychometric instruments as vocational counseling tools has advanced rapidly. Vocational counselors of today have access to a broad spectrum of psychometric instruments with which to assess the ability, aptitude, interest, intelligence quotient (IQ), and personality traits of the counselee (11, p. 43). Vocational counselors may use these instruments in individual testing or in group-testing situations such as those found in public school testing programs. In the latter case, economic factors usually make group testing more cost effective.

In the case of group administration of psychometric instruments, the vocational counselor is often faced with several problems concerning the reliability of the test results. A major problem stems from the fact that, in some cases, the counselee may have some type of reading disability that does not allow him to interpret the test instrument instructions or questions properly (13, p. 39).

Recognizing this, social scientists have begun to search for methods of testing in which the outcomes are unaffected by various reading disabilities or reading handicaps. One such method has been to employ audiovisual tests. This allows the counselee to employ more of his senses in interpreting the test.

Most of the developmental research in audiovisual testing has been in the areas of IQ, aptitude, and ability. However, there is little evidence that research is being conducted in the area of audiovisual interest tests (inventories). The lack of research is more evident in the case of interest inventories which can be employed in group testing programs (4, 5).

Vocational counselors of today are charged with the tremendous responsibility of advising counselees in vital career selection decisions. To enable the counselor to meet this responsibility, he must have at his disposal the best counseling tools available. One such tool should be a reliable audiovisual interest inventory.

Statement of the Problem

The problem of this study was the inability of current group administered interest inventories to determine the vocational interests of counselees who have low reading ability.

Purpose of the Study

The purposes of this study were

1. To develop an audiovisual interest inventory instrument suitable for use in group testing situations.

2. To determine the degree of correlation between student's basic interest scale scores on the audiovisual interest inventory and like scores on the Strong-Campbell Interest Inventory.

3. To determine if a statistically significant relationship exists between the correlations exhibited by high reading ability students and the correlations exhibited by low reading ability students.

Hypothesis

To carry out the purposes of this study, the following hypothesis was formulated:

There will be no statistically significant difference between the means of Group I (good readers) and Group II (poor readers) audiovisual interest inventory and Strong-Campbell Interest Inventory basic interest scale score correlations.

Background and Significance of the Study

The history and development of vocational counseling has paralleled man's societal development. Early forms of vocational counseling were directive in nature, with the counselee simply being told he would follow the father's trade or, alternatively, he was told he would be placed in an

apprenticeship or indentureship program. There were no professional vocational counselors. The family member in charge, usually the father, made the career decisions for the counselee based on tradition. Social scientists can only guess at the psychological effect this purely directive vocational counseling had on early societies.

Today, professional vocational counselors use an entirely different approach in their vocational counseling efforts. Modern vocational counselors appraise each individual counselee's ability, aptitude, interest, IQ, and personality traits. This information is organized in combination with information on career alternatives. This combined information is then presented to the counselee, and the counselee is encouraged to make his own decisions concerning career related matters.

The success of each counseling situation depends greatly on how well the vocational counselor gets to know the counselee (11, p. 81). Recognizing this, professional vocational counselors use many techniques to become familiar with counselee characteristics. These techniques range from simple interviews to rigorous mental and physical testing programs. The mental measurement techniques have evolved into a science: the science of psychometrics.

One of the earliest recorded attempts at using a scientific or psychometric approach to vocational counseling involved the use of phrenology in 1881. Lysander Richards recommended

using phrenological (skull measurements) studies of counselees as a basis for recommending career choices (7, p. 4).

From 1900 until the beginning of World War I, some progress in vocational counseling in the private sector was evident. Frank Parsons, now considered by many to be the father of vocational counseling, included vocational counseling as an integral part of the programs at his Breadwinner's Institute in Boston in 1905 (11, pp. 40-41). Public schools did little during this period to develop meaningful vocational counseling programs, and neither public nor private vocational counseling programs placed any emphasis on psychometrics. Though some psychometric instruments were developed by individuals in the public school systems, most were narrow in scope. Most of these early instruments were designed to aid in screening students for academic advisement and college placement purposes (11, p. 43).

Vocational counseling as a professional activity and as a part of public and private institutional programs remained in an embryonic state until World War I, as did advances in psychometrics. When the United States entered World War I and mobilization of the armed forces was initiated, recruiters and training personnel were faced with the task of assigning hundreds of men to fill military jobs. Logically, those responsible for assignments decided to take advantage of a recruit's civilian experience by assigning him to a similar military job. This worked only until the recruits learned of

the assignment system. Thereafter, few recruits would admit prior civilian training or knowledge in any area that was likely to qualify them for the more hazardous military assignments. This resulted in the training and assignment personnel having to make indescriminate assignments, often resulting in inept recruits being assigned to sensitive and important jobs, while the more astute men lanquished in menial job assignments.

In desperation and with efficiency at an all-time low, the military turned to the social scientists for assistance. Expert educators and psychologists, drawing from prior knowledge and hastily developed and conducted studies, began to develop psychometric instruments. The instruments developed during World War I included ability, aptitude, interest, IQ, and personality tests that were the forerunners of modern psychometric instruments (11, p. 43).

Since World War I, vocational counseling has grown in professional status. Federally mandated and funded vocational counseling programs are available in most schools. The development of psychometric instruments has continued and has kept pace with developments in vocational counseling programs in general. Psychologists, educators, vocational counselors, and other social scientists continue to revise old instruments and develop and test new ones. This continuing research is an effort to keep pace with the ever changing

technological world and to provide a useful vocational counseling tool with which to be of greater service to the counselee.

Although vocational counseling programs and the state of development of psychometric instruments have generally kept pace with technological development, one area of psychometrics seems to have been allowed to lag behind. Computer scans of the Educational Resources Information Center (E.R.I.C.) educational and psychological data bases indicate only limited research findings have been reported in the area of audiovisual psychometric instruments. These findings reference IQ, aptitude, and ability tests. There is no report of research concerning the development of audiovisual interest inventory instruments (4, 5, 13). Such an audiovisual interest inventory would be an invaluable aid to counselors in group testing situations in which some counselees are known or suspected of having reading disabilities or reading handicaps.

Low reading ability in students is recognized, and alternative or special education programs are initiated in most cases. However, students under treatment for reading deficiencies are often expected to take interest inventories along with students with higher reading ability. The student with the lower reading ability cannot read the test questions or instructions, becomes frustrated, and often marks the score sheet indescriminately (13, p. 39). The vocational

counselor has thus been deprived of one vital counseling tool, for such an indescriminately marked interest inventory is invalid and of no use to the counselor.

The community sector has voiced concern about the quality of the educational and guidance programs students are exposed to in the public schools. Parents want more emphasis on careers, and the vocational counselors are to be held responsible for providing sound and accurate vocational counseling (8, p. 36).

To accomplish the wishes and desires of the community, the vocational counselor must have the best tools available at his disposal. To ensure that the vocational counselor is well equipped, research in psychometrics should include developmental research in the area of audiovisual interest inventories.

Definition of Terms

For the purpose of this study, the following terms were defined:

1. AVII—The audiovisual counterpart to the standard Strong-Campbell Interest Inventory as developed in conjunction with and as a part of this study.

2. Basic interest scale scores—a set of twenty-three scores taken from the basic interest scale area of the Strong-Campbell Interest Inventory profile sheet.

3. ITBS—Iowa Test of Basic Skills.

4. SCII—Strong-Campbell Interest Inventory, a test of

vocational interests, published by Stanford University Press, Stanford, California.

Limitations of the Study

For the purpose of this study, the following limitations were applied:

1. This study involved a sample of eighth grade students at Congress Junior High School in Denton, Texas.

2. Only students with recent (previous school year) ITBS scores were considered in the statistical evaluation of the findings of this study.

3. Comparison of basic interest scaled scores between the two groups was based on ITBS reading scores only. No comparison with age, sex, ethnic group, etc. was made.

4. Due to economic and logistical factors, the audiovisual materials used in this study were limited to slide-tape presentations. No attempt to use video recording or film strip materials was made.

Procedures for Collecting the Data

Data collection for this study consisted of two major phases. Phase one was the development of the necessary audiovisual materials. Phase two was the actual testing and comparing of scores on the audiovisual interest inventory (AVII) and scores on the Strong-Campbell Interest Inventory (SCII) with reading scores on the Iowa Test of Basic Skills (ITBS).

To establish a basis for developing the audiovisual interest inventory, the SCII was used as a guide. The SCII has been developed, tested, and refined over a period of fifty years and is one of the most widely used and accepted of the interest inventories (10, p. 101).

Phase one, the development phase, consisted of preparing a collection of 325 thirty-five millimeter slides. Each slide represented one of the 325 items on the SCII. The slides were selected to represent the content of each of the corresponding written statements as closely as possible. Where actual pictorial representation was not possible, a slide of the statement, written in block letters on a chalkboard was substituted.

A casette tape was also developed that contained testing directions and a verbalization of each of the 325 statements on the SCII. Permission was granted by the SCII publishers to use these statements for the purpose of this study. (See Appendix A.) The tape was keyed with a tone which automatically advanced the slide projection equipment from slide to slide, each slide remaining on the screen for approximately ten seconds.

A panel of judges was convened to judge the validity of the AVII materials prior to any administration of the instrument.

Phase two of the study was the actual use and comparison of results of the AVII and the SCII. Testing was done on students in the eighth grade Occupational Orientation classes

at Congress Junior High School in Denton, Texas. The number of students tested was determined after the enrollment and registration for the Occupational Orientation class had been completed for the second quarter of the school year. The Occupational Orientation class, mandatory for all eighth graders in the Denton schools, thus yielded a sample of ninety-one students, distributed in five sections. However, sufficient data for statistical analysis were obtained on only fifty-seven of the students.

Each student in the selected sample was given the SCII during the first week of the second quarter of the school year. Approximately two weeks later, the same sample of students was given the AVII. In each case, the students marked a score sheet (See Appendix B) which was scanned by computer in the Computer Center at North Texas State University. These services were provided and monitored by the Counseling and Testing Center of North Texas State University.

Treatment of the Data

When the student's score sheets for both tests had been scanned and the computer printouts obtained, the basic interest scale scores were isolated. A Pearson correlation coefficient (r) was calculated for each student using the basic interest scale scores (See Appendix C) on the SCII printout and the like scores from the AVII printout as variables.

The resultant Pearson correlation coefficients (r) were then divided into two groups according to the reading ability

of the student concerned. Group I consisted of the correlations of students exhibiting recent ITBS reading scores at the fiftieth percentile and greater. Group II consisted of the correlations of students exhibiting recent ITBS reading scores below the fiftieth percentile.

An independent *t* test was performed to test for significant differences between means of the two groups of correlations.

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CHAPTER II

SURVEY OF RELATED LITERATURE

Introduction

To determine the extent and status of research that had been conducted on the subject of audiovisual psychometric instruments, a preliminary search of two major university libraries was conducted prior to initiating the study. There was little evidence of research found in the subject area of audiovisual psychometric instruments, while no evidence of research was found in the more specific subject area of audiovisual interest inventories.

To augment the library searches, several Educational Resources Information Center (E.R.I.C.) computer scans of both the educational and psychological data bases were conducted. Using various descriptors, neither data base was found to contain any evidence of research in the specific subject area of audiovisual interest inventories.

While the subject area of audiovisual psychometric instruments appeared to have been overlooked in research efforts, the literature did reveal a mass of writings on speculative theory of testing, individual differences, and the general advent and development of psychometric instruments of many other types.

In order to develop a significant background and a better understanding of the aspects and implications of the necessity to develop better psychometric instruments, this chapter will examine three major areas of interest pertinent to this study: (1) Psychometrics from a Historical Perspective: An Overview, (2) The Classification of Psychometric Instruments, and (3) The Emergence of the Interest Inventory.

Psychometrics from a Historical Perspective: An Overview

The idea of comparing individuals has long been of interest to man. Schieffelin and Schwesinger (27, p. 3) credit the Greek physician, Hippocrates, with first recording individual differences. Though Hippocrates is believed to be the name given to an imaginary editor of a collection of works, the general theme of all the Hippocratic writings is medical in nature (20). Thus, the interest in individual differences as expressed by Hippocrates was more concerned with man's physiological nature than his psychological nature.

Anastasi (1, p. 5) further credits the Greeks, through Socrates and the Socratic methods of teaching, with great advances in the studies of individual differences. The Socratic method of teaching, with its repetitive and progressive teaching and testing technique, provides the opportunity and the data for studies and observations of individuals

performing various tasks. Anastasi believes that Socrates and other early Greek teachers and philosophers were the first to take advantage of this opportunity, thereby establishing an ancient basis for modern mental testing programs.

DuBois (17, p. 3) cites examples of testing employed in early Chinese civilizations. Many of these early Chinese testing programs were designed to qualify public servants and equate well with our present civil service examination programs.

DuBois (17, p. 8) also recognizes oral testing programs in early European universities, but states that the tests were strictly concerned with academic achievement for purposes of placement and promotion. Comparative mental measurement of a scientific nature did not begin until much later.

Robb, Bernadoni, and Johnson (26, p. 12) credit Jean Marc Itard with the first scientific attempts at mental measurement. The year was 1798. Itard's work with the famous "wild boy" found living in the forests near Aveyron, France, fostered many theories about mental development and change. The boy, about twelve years of age when found, could not be made to change many of his wild ways. Itard's studies and early attempts at mental measurement prompted speculation that some mental processes are essentially irreversible beyond a certain age. Many psychologists still hold to this belief today.

By the late nineteenth century, a strong feeling of compassion for the mentally deficient had become evident. Striving to overcome prior maltreatment of mental deviates, psychologists quickly developed new testing methods. One of the recognized leaders of this era was the French psychologist Alfred Binet. Binet's search for ways with which to measure intelligence was exhaustive.

Initially, Binet tried to determine if a relationship existed between mental ability and physical characteristics. Recognizing that mental patients often had some rather unusual physical features, Binet began an exhaustive research project in which detailed examinations were made and measurements taken of facial features, hands, and cranium of hundreds of mental patients. However, little was learned from Binet's research that could be translated into positive findings (1, p. 10).

Binet was not alone in his quest for physical indicators of mentality. The English biologist, Sir Francis Galton, conducted many studies in this area as did the American psychologist, James Cattell. Cattell is credited with coining the term "mental test" (1, p. 10; 15, p. 4).

By the early twentieth century, mental measurement had become the main interest of several pioneer social scientists as well as medical doctors. Although, chiefly as a result of Binet's efforts, these early professionals had many types of tests at their disposal, most of the tests were concerned with measuring mental ability only.

In some cases, there is evidence of a lack of professional responsibility in the use of these early tests. Houts (21, pp. 45-64) reports that the newly developed Stanford-Binet test of intelligence was used to measure the mental ability of immigrants entering the United States. Those failing to pass were to be sterilized for "the prevention of idiocy." This test, developed by Terman at Stanford University, was a translation of Binet's test, thus the name Stanford-Binet. It was during the development of the hybrid Stanford-Binet test that Terman first defined intelligence quotient (I.Q.) as the ratio between mental age and chronological age (21).

During the early part of the nineteenth century, developments in psychometrics was, apart from the concentrated efforts of a few social scientists, sporadic and unorganized. However, through escallation of the war in Europe and the eventual involvement of the United States in the conflict which was to become World War I, the need for rapid advances and expansion in the science of psychometrics became quite apparent. It was never more apparent than when the need arose to classify thousands of newly recruited men and assign them to military training centers. The army promptly sought the aid of prominent social scientists in developing suitable psychometric instruments to be used in the classification and assignment processes (11, 15, 22).

The Army Alpha Test and the Army Beta Test were the products of the colaboration of experts during this developmental period. The alpha test was a combination I.Q., aptitude, and ability test while the beta was a non-verbal counterpart to the alpha test. The latter, being administered by word, gestures, and drawings, was designed for use with illiterate recruits. This series of tests was considered so successful that it has continued in use in modified form to the present time.

The success of the Army Alpha and Beta Tests as reported by Crites (15, p. 5) was a major factor which encouraged the test developers to return to their civilian endeavors with a renewed fervor for psychometrics and the development of psychometric instruments. Their efforts were soon apparent. By 1938, Buros (3, pp. 2-3) estimated that more than 1000 tests, both educational and mental, were in use. More than 200 of these tests had been written between 1936 and 1938 alone.

However, Buros was skeptical of the post-war proliferation of testing. He expressed doubts as to the reliability and validity of 98 per cent of the instruments so recently developed.

World War II prompted even greater fervor for testing than did World War I. From this renewed effort, many new and different theories were formulated. Crites (15, p. 7) credits Flanagan with one of the most important contributions in this area. Flanagan theorized that possibly more than 100

identifiable traits could be isolated and considered in military assignment of new recruits.

Flanagan's theory gave rise to the "trait factor" theory of choice (15) and later come to be known as the "factor analysis" method of determining aptitude potential (1, p. 15).

Since World War II, psychometrics has entered a new era. Crites (15, p. 9) labels this era as "theoretical," obviously due to the hundreds of theorists active in the field. Crites predicted in 1969 that still another new era of testing would be entered: the experimental era. In this era, more research would be conducted in the laboratory prior to field testing.

The experimental psychologist or social scientist will find a rich field of material currently available for clinical and field research. There is no reliable estimate of the number of psychometric instruments currently available. One source (13) lists more than 3000 instruments which were referenced in research related journals from 1969 to 1970.

The Classification of Psychometric Instruments

The proliferation of the development of psychometric instruments during the early twentieth century seemed to demand some method of classification or organization of the many available instruments. Up until this time, only two general classifications for measurement of individual differences had existed. These two classifications were mental and physical. Since Binet, Richards, and others (1,

15) had exhausted physical measurement in connection with mental ability without finding significant correlations, the two divisions become self sustaining. Later, Cattell's coining of the phrase "mental test" and Terman's definition and use of the term "I.Q." became synonymous with references to tests of mental ability.

When the army alpha and beta tests were adopted during World War II, other dimensions of classifications were added to the previously solitary classification of "intelligence test". The aplha test was termed a "pencil-and-paper test" (22) and the beta test was a "non-verbal" or "non-reading" test. The former was administered in the conventional manner, while the latter was administered by word, gestures, or drawings. The beta form was obviously designed for use with the illiterate or non-English speaking recruit.

Due mainly to Flanagan's early "trait-factor" theory in which he theorized that more than 100 factors of personality could be identified, isolated, and measured, psychologists soon began to develop special aptitude tests to fit specific aptitude areas. Anastiasi (1, p. 14) classifies these early aptitude tests into mechanical, clerical, musical, and artistic areas.

Anastiasi's classifications gave rise to the formation of multiple aptitude battery tests such as those used in World War II. These tests produced a profile which showed high and low scores in specific aptitude areas.

London (22, p. 43) adds still another dimension to the multi-factor Army Alpha and Beta Tests by contending that a measure of personality could also be derived along with intelligence and aptitude. A personal data information sheet was developed for use during alpha and beta screening during World War I (17, p. 94). Its use was limited during the war, however, post-war development lead to London's contention that personality tests were truly a product of World War I army screening procedures.

Still another dimension added to test classification as a result of World War I testing programs was the group test as opposed to the individual test. The well known Binet series of I.Q. tests was the standard up to this point and was an individually administered test requiring a highly trained test administrator.

The necessity to test large numbers of recruits in mass prompted the development of the Army Alpha Test in a form suited for this purpose. It required little skill on the part of the administrator and was easily scored. Although the Army Beta Test was somewhat different in these respects, the group administered test thus became a factor in test classification.

Shortly after World War I, Edward Thorndike recognized a consistency in expressed interests in school subjects and performance in the same subject areas (17, p. 77). Thorndike's findings prompted more research in the areas of interest testing. Soon, interest was recognized as a

psychological trait and was ranked along with personality, aptitude, ability, and I.Q.

Thus, by World War II, mental tests, or psychological tests, as they were now called, were divided into several groups and sub-groups. The major grouping was by individual or group-administered tests; pencil-and-paper, non-verbal, non-reading, and verbal forms. Sub-grouping was by specialized area such as personality, aptitude, ability, I.Q., and interest.

Other specialized areas consisted of achievement tests that measured level of attainment in general or specific subjects as well as aptitude and ability in these subjects.

In the early 1950's some psychologists began to experiment with test series which tried to determine a person's attitude toward specific subjects. Anastiasi (1, p. 543) believes this research to be relatively unimportant, comparing it to a series of opinion polls. However, later research was initiated which was directed at determining an individual's values. This new direction seems to have created a true sub-group of attitude tests.

Beyond the sub-group of personality, aptitude, ability, I.Q., interest, and attitude, further delination becomes quite difficult. Descriptors such as subjective or objective may pertain to some classifications of tests and not to others. Test responses may be classified into measured and indicated types. Different forms of the same test may be found to exist for the purpose of testing individuals with

many varieties of handicaps. Bi-lingual and multi-lingual versions may be found.

Test authors have added to the difficulties of test classification by referring to their instruments as tests, inventories, profiles, schedules, and blanks. In most cases, no reasons are given for this variation in the naming of instruments, and the various names are often used synonymously.

The Emergence of the Interest Inventory

Though social scientists were making great advances in testing in general, interest measurement research lay dormant for some time after World War I. DuBois (17, p. 77) credits Thorndike with the first published studies of interest measurements in 1927. Thorndike recorded a definite consistency of correlations in the expressed interests of students in certain school subjects with above average performance in the same subject areas.

Kelley, Miner, Yoakum, and Moore (17) explored Thorndike's findings and soon developed vocationally oriented interest tests. Much of this early developmental work in interest testing was done at the Carnegie Institute of Technology where E. K. Strong was a faculty member.

Later, at Stanford University, Strong and Kelley, supervising the graduate work of K. M. Crowdery, developed methods of weighting responses given on interest tests and relating these responses to various occupations. The product of this research was the original Strong Vocational Interest Blank,

published in 1927. This broad based empirical test was based on comparing interests of persons in specific groups with interests of persons in general. The Strong Vocational Interest Blank was widely accepted as the standard both in vocational guidance and as a research tool (17, p. 81). In 1933, a like instrument for women was developed.

In 1934, Frederick Kuder published an interest test called the Kuder Preference Record. Kuder's test forced the testee to make choices from triads of items. The comparison is with other forced choices on the same test by the same testee. Thus the Kuder Preference Record compares the testee to himself rather than to another group as did the Strong Vocational Interest Blank.

Kuder and Strong remained in contention for the leadership in interest testing for many years, with Strong eventually advancing to the lead. Reynolds and Sundberg (25), in their recent investigation of trends in mental measurement, surveyed the current and all previous issues of Buros' Mental Measurement Yearbook to determine how many reviews of tests were published in specific testing categories. Their research shows the Strong tests to be the fifth most studied test still in use today.

A similiar survey of the Mental Measurement Yearbooks conducted for this study shows an increase in interest test reviews from eight in 1938 to fifty in 1978.

Though the Strong Vocational Interest Inventory has been modified and re-named the Strong-Campbell Interest Inventory

and has remained the standard in interest testing, other interest tests have been developed. Of the many which have been developed, all are quite similiar except the Geist Picture Interest Inventory (GPII), the Picture Interest Exploration Survey (PIES), the Vocational Interest and Sophistication Assessment (VISA), and the Singer Picture Interest Screening materials. Each of the four instruments attempt to use media other than the prevalent written test booklet, answer sheet, and pencil. The GPII and the VISA use line drawings of people working while the PIES and the Singer use photographs or slides. The PIES uses slides of workers hands while the Singer photographs and slides usually show the entire body of the worker in the midst of the work environment. In each case, the testee is asked questions concerning his reactions to the drawings, slides or photographs.

The GPII, PIES, VISA, and Singer were all designed to stand on their own merit. None was designed or patterned after another known or proven test. Consequently, many claims of validity and reliability by the publishers are not substantiated. For example, Hahns' review in the Sixth Mental Measurement Yearbook (8) states that Geist's claim of high validity with low reading ability students cannot be substantiated. In the case of the PIES, no evidence of claims by the test authors concerning validity when used with low reading ability students could be found. Also, no

of research or reviews of any kind could be found concerning the PIES, VISA, or Singer instruments.

Summary

A review of the literature reveals a voluminous mass of writing which traces the historical and social development of testing world-wide. Though test production and analysis has proliferated in the twentieth century, certain areas appear to have been neglected. One such area is the audiovisual interest inventory.

Research has produced evidence of some thought on the matter in the form of four attempts at developing an interest inventory which uses photographs, drawings, or slides as an administration medium. These four instruments are the Geist Picture Interest Inventory, Picture Interest Exploration Survey, Vocational Interest and Sophistication Assessment, and the Singer Picture Interest Screening materials. Research data are either non-existant or inconclusive as to whether any of the instruments are effective when used with subjects with low reading ability.

There is no evidence of the development of an interest inventory which uses an entirely audiovisual format in its presentation and which is designed for use with subjects with normal reading ability or low reading ability. Similiarily, there is no evidence of such an audiovisual interest inventory which is based on or patterned after another interest inventory of known reliability and validity.

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CHAPTER III

METHODS AND PROCEDURES

Description of Subjects

The subjects initially involved in this study were ninety-one eighth grade students at Congress Junior High School in Denton, Texas. All students in the subject group were enrolled in Occupational Orientation, a one-quarter length course required for all eighth grade students in the Denton Independent School District. There were fifty males and forty-one females involved. All were thirteen or fourteen years of age except for two males, one twelve and one fifteen.

Twenty-eight of the students, all new to the Denton school system, did not have Iowa Test of Basic Skills (ITBS) scores in their permanent records file. Additionally, class changes, absences, and transfers precluded six students from completing the testing program. This resulted in a net sample size of fifty-seven (n = 57) students who were considered in the statistical evaluation of the data produced by the study.

There were three hearing-impaired students in the group described above, one male and two females. A translator was present to sign instructions for these students when necessary.

Description of Instruments

The Strong-Campbell Interest Inventory, (SCII) merged form of the Strong Vocational Blank for men and the like instrument for women, was selected to determine the expressed vocational interests of the students involved in the study. (See Appendix D).

The SCII consists of a test booklet containing 325 statements divided into seven categories or parts as follows: Part I, Occupations (135 statements); Part II, School Subjects (thirty-six statements); Part III, Activities (fifty-one statements); Part IV, Amusements, (thirty-nine statements); Part V, Types of People (twenty-three statements); Part VI, Preference Between Two Activities (twenty-nine statements); and Part VII, Your Characteristics (fourteen statements). Each part is preceded by a short set of directons which instruct the testee in the proper manner in which to approach that particular part.

In each part, except parts VI and VII, the testee is asked to indicate a like, indifferent, or dislike decision after reading each statement. Part VI requires a left, equal, or right decision while part VII requires a yes, undecided, or no decision.

Preferences in all parts are marked on an answer sheet with a soft lead pencil. (See Appendix B.) THe answer sheet is then computer scanned, and profile sheets for each testee are generated.

The scores as indicated on the profile sheets are derived through a weighting process after responses by the testee are compared with responses of successful persons in various career fields.

The test publishers fix the reading level of the test materials at about the sixth grade, although it is recommended that the test not be administered to students below the eighth grade (2, p. 21).

The audiovisual interest inventory (AVII) was patterned after the SCII and was developed in conjunction with and as a part of the study. The AVII materials consisted of 325 slides selected from a collection of approximately 800 slides. Each slide was selected from among several as the most appropriate in representing each of the SCII statements. (See appendix E.) In the case of part VI of the SCII in which a left, equal, or right decision was required, a split screen technique was used to produce the desired results by combining two slides into one.

Slides containing headings and instructions preceded each part. These instructions were in block lettering and were identical to the SCII instructions.

The slides were divided into four rotary carousels, each with an accompanying cassette tape. The slides were distributed in the carousels by parts as found in the SCII test booklet. Carousel one contained part I, carousel two contained part II, carousel three contained parts III, IV, V, and carousel four contained parts VI and VII.

The slides were submitted to a panel of judges prior to being used in administering the AVII. The judges, noted authorities in photography and journalism (See Appendix F.), determined that the slides did adequately represent the SCII statements in approximately 95 percent of the cases. (see Appendix G.)

The cassette tapes which accompanied the AVII slide carousels, contained instructions and statements which represented the contents of their respective carousels. These instructions and statements were a verbatim verbalization of the corresponding SCII test booklet items. The narrator, a female broadcasting-journalism major, was selected from among several applicants on the basis of voice clarity, diction, and inflection. The tapes were equipped with an inaudible 1000 Hz. tone which automatically advanced the projection equipment. The tone was timed to allow each slide to remain on the screen for a total of approximately ten seconds, or about seven seconds after the verbal statement corresponding to the slide had been completed. Slides containing instructions only were advanced as soon as the narrator had completed reading the corresponding narrative.

The running time for tapes one through four was twenty-two, seven, twenty, and eleven minutes respectively.

As with the SCII, students were asked to indicate preferences corresponding to each slide and its accompanying verbal statement. Score sheets identical to those used with

the SCII were used. The score sheets were computer scanned and profile sheets generated.

As an indicator of the reading ability of the students involved in the study, reading comprehension score percentiles for each student were obtained from school records. These percentiles, based on national norms, were reported subsequent to administration of the Iowa Test of Basic Skills (ITBS) in April of the previous school year.

The ITBS is a widely used battery of achievement tests. The ITBS (level 9 - 14 for grades three through nine) yielded fifteen scores for each student. These scores were distributed in six categories. The categories were vocabulary, reading comprehension, language, work-study skills, math skills, and a composite score. Percentile levels based on both national and local norms were reported.

Procedures for Collecting the Data

The SCII was administered to five sections of eighth grade Occupational Orientation students as previously described. Administration was during the first week of the second quarter of the school year. Students absent or failing to complete the SCII the first day were taken to the school library the following day and allowed to complete the SCII.

The AVII was administered to the same group of students two weeks later. Carousels one and two with tapes one and two were used the first day and carousels three and four with

tapes three and four were used the following day. The tape times as previously described, allowed administrative details such as roll call, announcements, and answer sheet heading completion, as well as testing, to be comfortably completed during two fifty-minute class periods. Those students who were absent on either day were unable to make up the portion missed due to other scheduled class activities.

Reading comprehension scores for students successfully completing both the SCII and the AVII were obtained from ITBS computer print-outs maintained in the school's permanent records file.

Procedures for Treating the Data

Student's answer sheets for both the SCII and the AVII were computer scanned at the North Texas State University Computer Center. Profile sheets (original and one copy) for both the SCII and the AVII were generated by the computer. The twenty-three basic interest scale scores (See Appendix E.) for each student on both the SCII and AVII profile sheets were isolated and recorded on index cards for easy reference.

A computer program in "Basic" (a computer language similiar to Fortran) was written to compute the Pearson correlation coefficient and the t-test for independent samples. (See Appendix H.) The program, compatable to the Apple II computer hardware, was stored on cassette tape for use as necessary.

Each student's basic interest scale scores on the SCII and the AVII were compared using the Pearson correlation coefficient computer program. This produced a correlation coefficient (r) value for each student. This r value depicted the degree of correlation between basic interest scale scores on the SCII and like scores on the AVII.

The correlations were then divided into two groups according to the reading ability of the student concerned. Group I consisted of the correlations of students exhibiting recent ITBS scores at or above the fiftieth percentile. Group II consisted of the correlations of students exhibiting recent ITBS scores below the fiftieth percentile.

The means of the Pearson correlation coefficients of the two groups were compared using the computer program for *t* tests for independent samples. N for group I was thirty-four, and N for group II was twenty-three (df = 55). The .05 level of significance was considered sufficient to reject the null hypothesis in a directional test.

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CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Analysis of Differences in Group Means

The participants in the study were given the Strong-Campbell Interest Inventory (SCII) to measure the level of vocational interest in a number of areas. Two weeks later the same group was given the audiovisual interest inventory (AVII). The second inventory, developed in conjunction with and as a part of the study, consisted of a slide-tape presentation identical in format to the SCII. Identical score sheets were used to record responses to both inventories.

Two interest profile sheets were computer generated for each student, one for the SCII and one for the AVII. The twenty-three basic interest scale scores were isolated on each student's profile sheets.

A Pearson correlation coefficient (r) was calculated for each student, depicting the degree of correlation between the SCII and AVII basic interest scale scores.

The resultant correlations were then grouped according to the reading ability of the student concerned as determined by the Iowa Test of Basic Skills (ITBS) reading comprehension percentile. Group I consisted of the correlations of students exhibiting recent ITBS reading comprehension scores at or above the fiftieth percentile, while group II exhibited

scores below the fiftieth percentile. Table I shows the Pearson Correlation distribution by group. Table II shows

TABLE I

GROUP I AND GROUP II
PEARSON CORRELATION DISTRIBUTIONS

GROUP I (N = 34)		GROUP II (N = 23)	
.95	.84	.96	.71
.92	.82	.93	.68
.92	.81	.92	.66
.90	.80	.92	.52
.90	.80	.88	.30
.90	.78	.87	.14
.90	.77	.87	
.90	.75	.86	
.90	.74	.81	
.88	.74	.81	
.88	.73	.80	
.88	.70	.79	
.88	.69	.78	
.85	.67	.78	
.84	.64	.78	
.84	.54	.76	
.84	.35	.76	
MEAN = .80		MEAN = .75	

the ITBS reading score percentiles which correspond to the Pearson correlations in Table I.

Table I data reflect a mean of .80r for group I correlations and a mean of .75r for group II correlations.

TABLE II

GROUP I AND GROUP II IOWA TEST OF BASIC SKILLS READING COMPREHENSION SCORE PERCENTILES

GROUP I (N = 34)		GROUP II (N = 23)	
78	63	13	7
88	58	24	16
88	58	45	7
87	89	45	19
83	88	30	3
83	78	25	10
80	58	3	
70	65	45	
63	95	16	
81	83	21	
74	65	7	
59	81	48	
54	95	43	
74	58	10	
84	81	3	
81	78	32	
74	61	30	
MEAN = 75		MEAN = 22	

Table II data reflect a mean of 75 for group I ITBS reading score percentiles and a mean of 22

for group II score percentiles, a net difference of 53 percentile points. It sould be noted that the means of the percentile score distributions in Table II are at or near the first and third quartiles. However, as shown in Table I, the means of the correlation distributions for both groups are at or near the third quartile with a difference of only .05r.

A *t* test for independent samples was performed to test the null hypothesis concerning the means of the two groups of correlations. An alternative hypothesis, stating that the mean of group I would be significantly greater than the mean of group II was assumed. This assumption, along with the previously determined .05 level of significance, indicated a non-directional (one-tailed) interpolated t value of ± 1.674 (df = 55) as sufficient to reject the null hypothesis.

The calculated *t* value for the data as listed in Table I was -1.178 (df = 55). This value would indicate a retention of the null hypothesis to be in order.

Subjective Data

During the administration of the SCII and the AVII, notes were taken by the test administrator and the regular classroom teacher. An overview and summary of the subjective data accumulated in this manner revealed a great deal of comparative information concerning student reaction to the two test instruments used in the study.

1. The SCII, being a self-paced instrument, allowed the students to start and stop at will. These periods of

inactivity were often used by the students to initiate dialogue with the test administrator, teacher, or other students. In some cases, students initiated disruptive behavior which required a word of discipline from the teacher. However, during the AVII administrations, class disruption was almost non-existent. The students quickly learned that the audiovisual equipment was automatically advanced and that it would not be stopped by the administrator nor would any portion be repeated.

2. Some students were observed marking their answer sheets without looking at the screen. However, when an item of particular interest to them was mentioned, these students were observed studying the screen intently.

3. Only one student showed marked resistance to the AVII while several resisted the SCII. The sole resistor to the AVII soon became interested and did complete the test program.

4. In some cases, students asked for an explanation of a verbal statement during administration of the AVII. When the test administrator remained mute to the inquiry, the students took a cue from the accompanying slide and completed the item in question. Although oral reaction to the AVII materials during testing was discouraged by the test administrator and the teacher, some reactions to the visual stimuli were: "That looks boring", "I don't like to wear a suit", and "Hey, that's neat".

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The problem initiate to the study was the inability of current group administered interest inventories to determine the vocational interests of counselees who have low reading ability.

The purpose of the study was (1) to develop an audio-visual interest inventory instrument suitable for use in group testing situations, (2) to determine the degree of correlation between student's basic interest scale scores on the audiovisual interest inventory and like scores on the Strong-Campbell Interest Inventory, and (3) to determine if a statistically significant relationship existed between the correlations exhibited by high reading ability students and correlations exhibited by low reading ability students.

The study was conducted in two major phases. Phase one was the development of the materials and media for the audio-visual interest inventory (AVII). Phase two was the actual field testing of the instrument and the collection and analysis of the data.

Phase one, the development of the AVII materials, consisted of preparing a collection of 325 thirty-five millimeter slides. Each slide was a visual representation of a

corresponding statement on the Strong-Campbell Interest Inventory (SCII). Additionally, cassette tapes were prepared which contained a verbalization of the SCII statements. The tapes and slides were synchronized by using inaudible automatic advance tones and automatic projection equipment. Each slide remained on the screen for about ten seconds.

The visual material was reviewed by a panel of judges prior to field testing. In the opinion of the judges, the AVII slides did sufficiently represent the SCII statements in 95 per cent of the cases.

Phase two, field testing of the AVII materials, was accomplished by administering the SCII and AVII to a group of ninety-one eighth grade students at Congress Junior High in Denton, Texas. A two week period was allowed to elapse between administrations.

Reading ability of the students involved in the study was determined by examining Iowa Test of Basic Skills (ITBS) reading comprehension scores as reflected in the student's permanent records file.

The phase two statistical analysis of the data produced by the study consisted of isolating the twenty-three basic interest scale scores on both the SCII and AVII computer generated profile sheets for each student. A Pearson correlation coefficient (r) was calculated to determine the degree of correlation between SCII and AVII basic interest scale scores for each student.

The correlations were then divided into two groups. Group I was comprised of thirty-four correlations of students exhibiting recent ITBS reading comprehension scores at or above the fiftieth percentile. Group II was comprised of twenty-three correlations of students ranking below the fiftieth percentile. There was insufficient data for statistical analysis on thirty-four of the ninety-one students involved in the study.

A *t* test for independent samples was performed to determine if a statistically significant difference existed between the means of SCII and AVII basic interest scale correlations exhibited by group I and like score correlations exhibited by group II.

Findings

A null hypothesis formulated for the study stated that there would be no statistically significant difference between the means of group I correlations and group II correlations. An alternate hypothesis, stating that the mean of group I correlations would be significantly higher than the mean of group II correlations, was assumed. A level of significance of .05 was considered to be sufficient to reject the null hypothesis.

The *t* test for independent samples was performed to test the hypothesis as stated. The alternate hypothesis required the t-test to be directional (one-tailed). The degree of freedom was 55 ($N_1 + N_2 - 2$).

Some interpolation of published tables was necessary to determine that a $\underline{t}$ value of ± 1.674 would be sufficient to reject the null hypothesis. However, a $\underline{t}$ value of -1.178 was calculated, based on the means of groups I and II. This falls short of the necessary ± 1.674 and indicates the null hypothesis should be retained.

Conclusions

Based on the review of the literature, observations noted during field testing of the SCII and AVII insturments, and a statistical analysis of the data, the following conclusions were drawn:

1. No audiovisual interest inventories, structured or patterned after known and proven conventionally administered inventories, have recently been developed or subjected to research.

2. Student resistance to testing was lower with the AVII than with the SCII. Negative comments and minor exhibitions of temper were reduced when students became aware of the audiovisual format of the AVII.

3. Student attention to the task and behavior during testing improved during AVII administration. Minor disturbances, altercations, and unnecessary conversation were observed during SCII testing. Such undesirable behavior did not occur as frequently or with as much intensity during AVII administrations.

4. An examination of a synopsis of notes taken during field testing of the AVII and SCII instruments revealed that

the AVII did bring a welcome respite from tests which employ a written format. The classroom teacher and many students expressed pleasure and a sense of relief at not having to read test questions and worry about correct interpretation of the material. Some students termed the AVII as "fun".

5. Although a difference of .05 r existed between the means of groups I and II, this difference was determined to have no statistical significance based on the findings of a directional t test at the .05 level of significance.

Recommendations

Based on the findings and conclusions of the study, the following recommedations are presented:

1. The visual presentation of the AVII should be improved. The slides should be prepared by a professional studio with more attention to staging, lighting, and characters.

2. Several slides representing each SCII statement should be prepared and a panel of judges convened to select the most appropriate slide from among several. Criteria for slide selection should include observations for sex, ethnic, or other forms of bias or stereotyping.

3. Additional studies should be initiated using tapes prepared in geographically suitable languages or dialects.

4. An item analysis of each AVII response compared to each SCII response from a large randomly selected sample should be conducted.

5. Additional studies should be intiated using different statistical design, such as pre-test, post-test, control group design.

6. Statistical analysis of the data produced by future studies should include an item by item response correlation study, and analysis of scores based on reading levels of adjacent deciles and quartiles.

7. Statistical analysis of the data produced by future studies should include evaluation of performance of ethnic minorities or geographically unique groups.

8. A high level of student acceptance of audiovisual test materials indicate a concentrated effort should be initiated to produce and use more audiovisual tests in the classroom.

9. Additional research should be initiated in audiovisual equivalents of known and proven tests in all areas of psychometrics.

APPENDIX A

Stanford University Press
STANFORD, CALIFORNIA 94305

January 15, 1979

Professor Pat N. McLeod
Department of Education
North Texas State University
Denton, Texas 76203

Dear Professor McLeod:

SVIB-SCII

Your doctoral student Jack Roberts has our permission to use the Strong-Campbell Interest Inventory booklet in developing an audiovisual, nonverbal instrument for his doctoral research, provided the proper copyright indicia is included in any printout or display, and the instrument is used solely for the limited research purpose required for his doctoral work. All scoring would be done and accounted for by North Texas State University under its license from us.

Yours sincerely,

Leon E. Seltzer
Director

LES:a

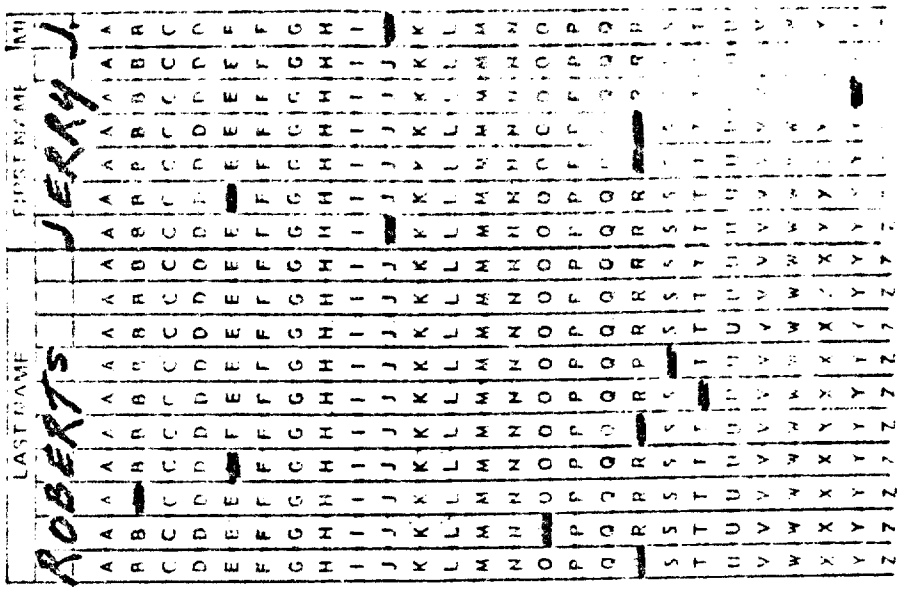
Telephone (415) 323-9471 *Cable* STANPRESS

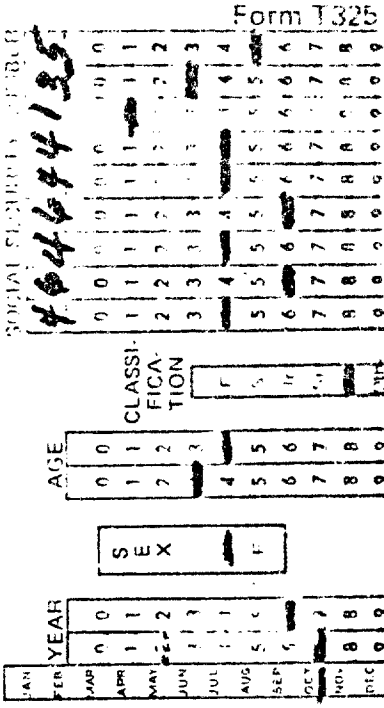
APPENDIX B

STRONG-CAMPBELL INTEREST INVENTORY

Form T325

COUNSELING AND TESTING SERVICES
NORTH TEXAS STATE UNIVERSITY





OCCUPATIONS

1	L	I	2	L	I	3	I	D	4	L	I	5	L	D	6	L	D	7	L	I	8	L	I	9	L	I
10	L	D	11	L	I	12	L	D	13	L	D	14	I	D	15	L	D	16	L	I	17	L	I	18	L	I
19	L	I	20	L	I	21	I	D	22	L	I	23	L	D	24	I	D	25	L	I	26	L	I	27	L	D
28	L	I	29	L	I	30	L	I	31	L	I	32	I	D	33	I	D	34	L	D	35	L	I	36	L	I
37	L	I	38	L	I	39	L	I	40	L	I	41	L	I	42	L	I	43	L	I	44	L	D	45	L	I
46	L	I	47	L	I	48	L	I	49	L	I	50	L	I	51	I	D	52	L	D	53	L	I	54	L	I
55	L	I	56	L	D	57	L	I	58	L	I	59	I	D	60	L	I	61	L	I	62	L	I	63	I	D
64	L	I	65	L	I	66	L	D	67	L	D	68	I	D	69	L	I	70	L	I	71	L	D	72	L	I
73	L	I	74	L	I	75	I	D	76	I	D	77	L	I	78	L	I	79	L	I	80	I	D	81	I	D
82	L	I	83	L	I	84	L	I	85	L	I	86	L	I	87	L	I	88	L	I	89	L	D	90	L	I
91	L	I	92	L	I	93	L	D	94	L	I	95	L	I	96	L	I	97	L	I	98	L	I	99	L	I
100	L	I	101	L	I	102	L	I	103	L	I	104	L	I	105	I	D	106	L	D	107	L	I	108	L	I
109	L	I	110	L	D	111	L	I	112	L	D	113	L	I	114	L	D	115	L	I	116	L	I	117	L	I
118	L	I	119	L	I	120	L	I	121	L	D	122	I	D	123	L	I	124	L	D	125	L	I	126	L	I
127	I	D	128	L	I	129	L	I	130	L	I	131	L	I												

L=LIKE, I=INDIFFERENT, D=DISLIKE

PLEASE MISTAKES CLEANLY

SCHOOL SUBJECTS

132	I	D	133	I	D	134	I	D	135	L	I	136	I	D	137	L	D	138	L	I	139	L	I	140	L	I
141	I	D	142	L	I	143	L	I	144	L	I	145	L	D	146	I	D	147	L	I	148	I	D	149	L	D
150	I	D	151	I	D	152	I	D	153	L	I	154	I	D	155	L	I	156	L	I	157	L	D	158	L	I
159	I	D	160	L	D	161	L	I	162	L	D	163	L	D	164	L	D	165	L	I	166	L	I	167	L	I

SOCIAL SECURITY NUMBER 464551135

ACTIVITIES

(SAME INSTRUCTIONS AS PAGE 1)

168 L I D 169 L I D 170 L I D 171 L I D 172 L I D 173 L I D 174 L I D 175 L I D 176 L I D

177 L I D 178 L I D 179 L I D 180 L I D 181 L I D 182 L I D 183 L I D 184 L I D 185 L I D

186 L I D 187 L I D 188 L I D 189 L I D 190 L I D 191 L I D 192 L I D 193 L I D 194 L I D

195 L I D 196 L I D 197 L I D 198 L I D 199 L I D 200 L I D 201 L I D 202 L I D 203 L I D

204 L I D 205 L I D 206 L I D 207 L I D 208 L I D 209 L I D 210 L I D 211 L I D 212 L I D

213 L I D 214 L I D 215 L I D 216 L I D 217 L I D 218 L I D

AMUSEMENTS

219 L I D 220 L I D 221 L I D 222 L I D 223 L I D 224 L I D 225 L I D 226 L I D 227 L I D

228 L I D 229 L I D 230 L I D 231 L I D 232 L I D 233 L I D 234 L I D 235 L I D 236 L I D

237 L I D 238 L I D 239 L I D 240 L I D 241 L I D 242 L I D 243 L I D 244 L I D 245 L I D

246 L I D 247 L I D 248 L I D 249 L I D 250 L I D 251 L I D 252 L I D 253 L I D 254 L I D

255 L I D 256 L I D 257 L I D

TYPES OF PEOPLE

258 L I D 259 L I D 260 L I D 261 L I D 262 L I D 263 L I D 264 L I D 265 L I D 266 L I D

267 L I D 268 L I D 269 L I D 270 L I D 271 L I D 272 L I D 273 L I D 274 L I D 275 L I D

276 L I D 277 L I D 278 L I D 279 L I D 280 L I D 281 L I D

PREFERENCE BETWEEN TWO ACTIVITIES

282 L = R 283 L = R 284 L = R 285 L = R 286 L = R 287 L = R 288 L = R 289 L = R 290 L = R

291 L = R 292 L = R 293 L = R 294 L = R 295 L = R 296 L = R 297 L = R 298 L = R 299 L = R

300 L = R 301 L = R 302 L = R 303 L = R 304 L = R 305 L = R 306 L = R 307 L = R 308 L = R

309 L = R 310 L = R 311 L = R

YOUR CHARACTERISTICS

312 Y ? N 313 Y ? N 314 Y ? N 315 Y ? N 316 Y ? N 317 Y ? N 318 Y ? N 319 Y ? N 320 Y ? N

321 Y ? N 322 Y ? N 323 Y ? N 324 Y ? N 325 Y ? N

APPENDIX C

STRONG-CAMPBELL INTEREST INVENTORY PROFILE

SEX: M DATE: 10/76 AGE: 34 CLASSIFICATION: GRADUATE

BASIC INTEREST SCALES

THEME	SCALE	SCORE	VERY LOW	LOW	AVERAGE	HIGH	VERY HIGH
	AGRICULTURE	52			*		
	NATURE	40		*			
R	ADVENTURE	55			*		
	MILITARY ACTIVITY	41		*			
	MECHANICAL	61				*	
			30	40	50	60	70
	SCIENCE	49			*		
I	MATHEMATICS	51			*		
	MEDICAL SCIENCE	36		*			
	MEDICAL SERVICE	40		*			
	MUSIC/DRAMATICS	31		*			
A	ART	40			*		
	WRITING	36		*			
	TEACHING	52			*		
	SOCIAL SERVICE	41			*		
S	ATHLETICS	29	*				
	DOMESTIC ARTS	27	*				
	RELIGIOUS ACTIVITY	39		*			
			30	40	50	60	70
	PUBLIC SPEAKING	35		*			
	LAW/POLITICS	33		*			
E	MERCHANDISING	37		*			
	SALES	42			*		
	BUSINESS MGMT.	47			*		
C	OFFICE PRACTICES	37		*			

OCCUPATIONAL SCALES

APPENDIX D

FORM T325

Strong-Campbell Interest Inventory

Merged Form of the

Strong Vocational Interest Blank

EDWARD K. STRONG, JR. 1884-1963 DAVID P. CAMPBELL

This inventory is used to help you understand your work interests in a general way, and to show you some kinds of work you might be comfortable in. The following pages list many jobs, activities, school subjects, and so forth, and you are asked to show your liking or disliking for each. Your answers will be compared with the answers given by people already working in a wide range of jobs, and your scores will show how similar your interests are to the interests of these people. But this is not a test of your *abilities*; it is an inventory of your *interests*. Your scores will be presented to you later, on a special sheet called a profile, with information on how to understand the scores.

Directions:

1. With this booklet, you should have a **special answer sheet** on which to mark your answers.
2. **Please make no marks on this booklet**; it will be used again by other people.
3. Use any soft, black, lead pencil (such as a No. 2) to make your marks on the answer sheet.
4. Fill in your name and other information on the answer sheet. Follow carefully the instructions for filling in your name.
5. **Instructions for marking your answers** are given on the next page of this booklet and also on the answer sheet.
6. **Make a heavy, dark mark for each answer**—not a cross or a check mark.
7. If you make a mistake or change your mind, **erase carefully and thoroughly.**
8. Your answer sheet will be processed by computer. **Please keep it free from wrinkles or stray marks**, so that it will be scored correctly.
9. Try to answer each question. **Work quickly**; first impressions usually give the best results with this inventory. Turn the page and begin.

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Part I. Occupations

Many occupations are listed below. For each of them, show how you would feel about doing that kind of work.

Mark on the answer sheet in the space labeled "**L**" if you think you would **like** that kind of work.
Mark in the space labeled "**I**" if you are **indifferent** (that is, if you think you wouldn't care one way or another).
Mark in the space labeled "**D**" if you think you would **dislike** that kind of work.

Don't worry about whether you would be good at the job or about not being trained for it. Forget about how much money you could make or whether you could get ahead. Think only about whether you would like to do the work done in that job. **Work fast. Answer every one.**

1 Actor/Actress
2 Advertising executive
3 Architect
4 Art museum director
5 Art teacher
6 Artist
7 Artist's model
8 Astronomer
9 Athletic director
10 Auctioneer
11 Author of children's books
12 Author of novels
13 Author of technical books
14 Auto mechanic
15 Auto racer
16 Auto sales
17 Bank teller
18 Beauty and haircare consultant
19 Biologist
20 Bookkeeper
21 Building contractor
22 Business teacher
23 Buyer of merchandise
24 Carpenter
25 Cartoonist
26 Cashier in bank
27 Chemist
28 Children's clothes designer
29 Church worker
30 City or state employee
31 City planner
32 Civil engineer
33 College professor
34 Computer operator
35 Corporation lawyer
36 Costume designer
37 Courtroom stenographer
38 Criminal lawyer
39 Dancing teacher
40 Dental assistant
41 Dentist
42 Designer, electronic equipment
43 Dietitian
44 Draftsman
45 Dressmaker/Tailor
46 Editor
47 Electrical engineer
48 Electronics technician
49 Elementary school teacher
50 Employment manager
51 Factory manager
52 Farmer
53 Fashion model
54 Florist
55 Foreign correspondent
56 Foreign service officer
57 Free-lance writer
58 Governor of a state
59 High school teacher
60 Home economics teacher
61 Hospital records clerk
62 Housekeeper
63 Hotel manager
64 Illustrator
65 Income tax accountant
66 Interior decorator
67 Inventor
68 Jet pilot
69 Judge
70 Labor arbitrator
71 Laboratory technician
72 Landscape gardener
73 Librarian
74 Life insurance agent
75 Machine shop supervisor
76 Machinist
77 Manager, Chamber of Commerce
78 Manager, child care center
79 Manager, women's style shop
80 Manufacturer
81 Mechanical engineer
82 Military officer
83 Minister, priest, or rabbi
84 Musician
85 Newspaper reporter
86 Nurse
87 Nurse's aide/Orderly
88 Office clerk
89 Office manager
90 Opera singer
91 Orchestra conductor
92 Pharmacist
93 Photographer
94 Physician
95 Playground director
96 Poet
97 Police officer
98 Politician
99 Private secretary
100 Professional athlete
101 Professional dancer
102 Professional gambler
103 Psychologist
104 Public relations director
105 Rancher
106 Realtor
107 Receptionist
108 Retailer
109 Sales manager
110 School principal
111 Scientific illustrator
112 Scientific research worker
113 Sculptor
114 Secret service agent
115 Social worker
116 Specialty salesperson
117 Sports reporter
118 Statistician
119 Flight attendant
120 Stockbroker
121 Surgeon
122 Toolmaker
123 Traveling salesperson
124 Travel bureau manager
125 Typist
126 TV announcer
127 Vocational counselor
128 Waiter/Waitress
129 Wholesaler
130 X-Ray technician
131 YMCA/YWCA staff member

Part II. School Subjects

Show in the same way whether you are interested in these school subjects, even though you may not have studied them.

Mark "L" for **Like.**
Mark "I" for **Indifferent** (when you don't care one way or the other).
Mark "D" for **Dislike.**

132 Agriculture
133 Algebra
134 Arithmetic
135 Ancient languages (Latin, Sanskrit, etc.)
136 Art
137 Bible history
138 Bookkeeping
139 Botany
140 Calculus
141 Chemistry
142 Civics (government)
143 Dramatics
144 Economics
145 English composition
146 Geometry
147 Home economics
148 Industrial arts
149 Journalism
150 Literature
151 Mathematics
152 Mechanical drawing
153 Military drill
154 Modern languages (French, German, etc.)
155 Nature study
156 Penmanship
157 Philosophy
158 Physical education
159 Physics
160 Physiology
161 Political science
162 Psychology
163 Public speaking
164 Sociology
165 Statistics
166 Typewriting
167 Zoology

Part III. Activities

Show your interests in the same way as before. Give the first answer that comes to mind.

168 Making a speech
169 Doing research work
170 Repairing a clock
171 Cooking
172 Operating machinery
173 Writing reports
174 Discussing politics
175 Taping a sprained ankle
176 Adjusting a carburetor
177 Going to church
178 Heading a civic improvement program
179 Raising flowers and vegetables
180 Interviewing job applicants
181 Teaching children
182 Teaching adults
183 Meeting and directing people
184 Taking responsibility
185 Sewing
186 Making statistical charts
187 Operating office machines
188 Giving first aid assistance
189 Decorating a room with flowers
190 Interviewing prospects in selling
191 Drilling soldiers
192 Pursuing bandits in a sheriff's posse
193 Watching an open-heart operation
194 Checking typewritten material for errors
195 Repairing electrical wiring
196 Organizing cabinets and closets
197 Adjusting difficulties of others
198 Starting a conversation with a stranger
199 Cabinetmaking
200 Being a forest ranger
201 Bargaining ("swapping")
202 Looking at things in a clothing store
203 Buying merchandise for a store
204 Displaying merchandise in a store
205 Competitive activities
206 Regular hours for work
207 Continually changing activities
208 Interviewing clients
209 Arguments
210 Developing business systems
211 Doing your own laundry work
212 Saving money
213 Contributing to charities
214 Raising money for charity
215 Expressing judgments publicly, regardless of what others say
216 Climbing along the edge of a steep cliff
217 Living in the city
218 Discussing the purpose of life

Part IV. Amusements

Show in the same way how you feel about these ways of having fun. Work rapidly. Do not think over various possibilities. Give the first answer that comes to mind.

219 Golf
220 Fishing
221 Jazz or rock concerts
222 Looking at things in a hardware store
223 Boxing
224 Poker
225 Bridge
226 Solving mechanical puzzles
227 Planning a large party
228 Religious music
229 Drilling in a military company
230 Amusement parks
231 Conventions
232 Formal dress affairs
233 Electioneering for office
234 Art galleries
235 Leading a scout troop
236 Writing a one-act play
237 Symphony concerts
238 Night clubs
239 Church young people's group
240 Sports pages in the newspaper
241 Poetry
242 Skiing
243 Business magazines
244 Popular mechanics magazines
245 Reading the Bible
246 Magazines about art and music
247 Building a radio or stereo set
248 Attending lectures
249 Family pages in newspapers
250 Performing scientific experiments
251 Camping
252 Playing chess
253 Preparing dinner for guests
254 Entertaining others
255 Trying new cooking recipes
256 Being the first to wear the latest fashions
257 Organizing a play

Part V. Types of People

Most of us choose jobs where we can work with people we enjoy. Show in the same way as before how you would feel about having day-to-day contact with the following types of people. Work fast. Don't think of specific examples. Just give the first answer that comes to mind.

258 Highway construction workers
259 High school students
260 Military officers
261 Artistic persons
262 Foreigners
263 Ballet dancers
264 Nonconformists
265 People who assume leadership
266 Religious people
267 Aggressive people
268 Physically sick people
269 Babies
270 Very old people
271 Emotional people
272 People who have made fortunes in business
273 Thrifty people
274 Musical geniuses
275 Outspoken people with new ideas
276 Fashionably dressed people
277 Prominent business leaders
278 Athletic persons
279 People who daydream a lot
280 Outstanding scientists
281 People who live dangerously

Part VI. Preference Between Two Activities

Here are several pairs of activities or occupations. Show which one of each pair you like better: if you prefer the one on the **left**, mark in the space labeled **"L"** on the answer sheet; if you prefer the one on the **right**, mark in the space labeled **"R"**; if you like **both the same**, or if you **can't decide**, mark in the space labeled **"="**. Work rapidly. Make one mark for each pair.

Airline pilot	282	Airline ticket agent
Taxicab driver	283	Police officer
Headwaiter/Hostess	284	Lighthouse keeper
Selling things house to house	285	Gardening
Developing plans	286	Carrying out plans
Doing a job yourself	287	Telling somebody else to do the job
Dealing with things	288	Dealing with people
Taking a chance	289	Playing safe
Drawing a definite salary	290	Receiving a commission on what is done
Outside work	291	Inside work
Work for yourself	292	Carrying out the program of a superior whom you respect
Superintendent of a hospital	293	Warden of a prison
Vocational counselor	294	Public health officer
Physical activity	295	Mental activity
Dog trainer	296	Juvenile parole officer
Thrilling, dangerous activities	297	Quieter, safer activities
Physical education director	298	Free-lance writer
Statistician	299	Social worker
Technical responsibility (in charge of 25 people doing scientific work)	300	Supervisory responsibility (in charge of 300 people doing business-office work)
Going to a play	301	Going to a dance
Teacher	302	Salesperson
Experimenting with new grooming preparations	303	Experimenting with new office equipment
Being married to a research scientist	304	Being married to a sales executive
Working in a large corporation with little chance of being president before age 55	305	Working for yourself in a small business
Working in an import-export business	306	Working in a research laboratory
Music and art events	307	Athletic events
Reading a book	308	Watching TV or going to a movie
Appraising real estate	309	Repairing and restoring antiques
Having a few close friends	310	Having many acquaintances
Work in which you move from place to place	311	Work where you live in one place

Part VII. Your Characteristics

Show here what kind of person you are: if the statement describes you, mark in the space labeled "**Y**" (for "Yes"); if the statement does **not** describe you, mark in the space labeled "**N**" (for "No"); if you cannot decide, mark in the space labeled "**?**." (Be frank in pointing out your weak points, because these are as important as your strong points in choosing a career.)

312 Usually start activities of my group
313 Have more than my share of novel ideas
314 Win friends easily
315 Make decisions immediately, not after considerable thought
316 Prefer working alone rather than on committees
317 Have mechanical ingenuity (inventiveness)
318 Am concerned about philosophical problems such as religion, meaning of life, etc.
319 Can prepare successful advertisements
320 Stimulate the ambitions of my associates
321 Can write a concise, well-organized report
322 Enjoy tinkering with small hand tools
323 Can smooth out tangles and disagreements between people
324 Put drive into an organization
325 Have patience when teaching others

APPENDIX E

PHOTO-COPY REPRODUCTION

AVII PART I, STATEMENT 14

"AUTO MECHANIC."

PHOTO-COPY REPRODUCTION

AVII PART II, STATEMENT 152

"MECHANICAL DRAWING."

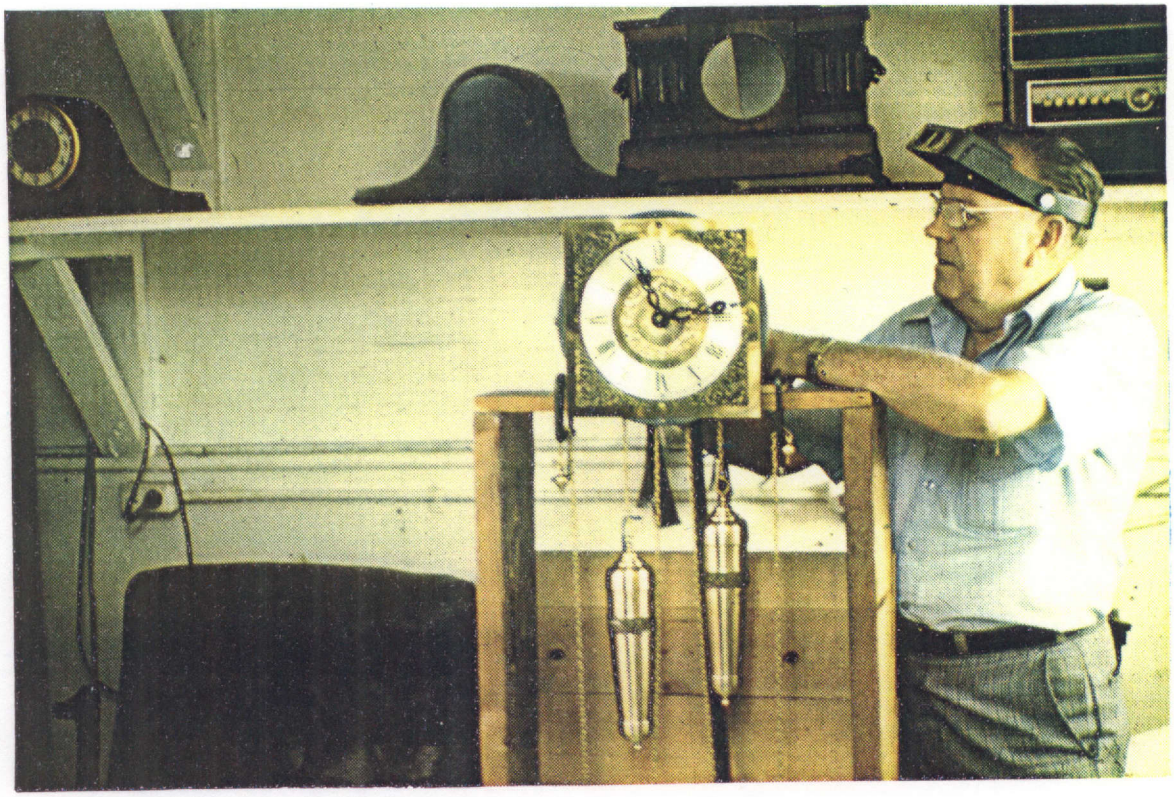

PHOTO-COPY REPRODUCTION

AVII PART III, STATEMENT 170

"REPAIRING A CLOCK."

PHOTO-COPY REPRODUCTION

AVII PART IV, STATEMENT 234

"ART GALLERIES."

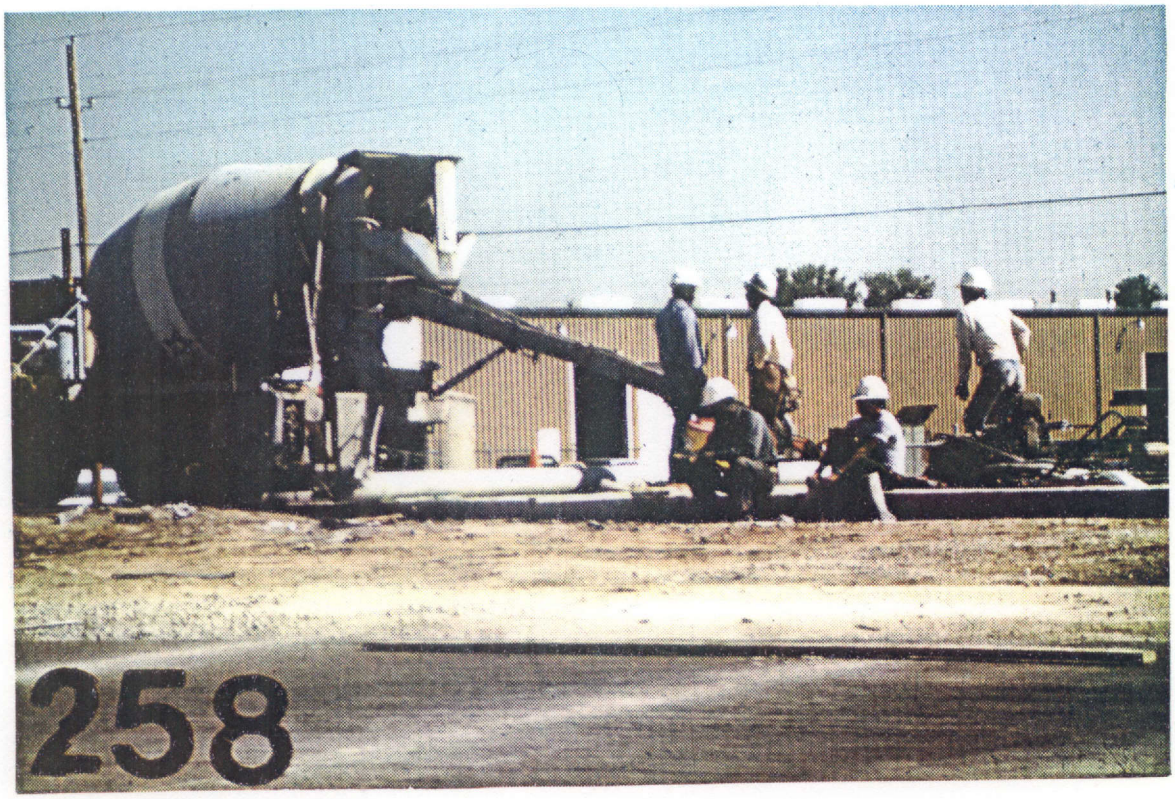

PHOTO-COPY REPRODUCTION

AVII PART V, STATEMENT 258

"HIGHWAY CONSTRUCTION WORKERS."

PHOTO-COPY REPRODUCTION

AVII PART VI, STATEMENT 287

"DOING A JOB YOURSELF,"

OR

"TELLING SOMEBODY ELSE TO DO THE JOB."

PHOTO-COPY REPRODUCTION

AVII PART VII, STATEMENT 316

"PREFER WORKING ALONE RATHER THAN

ON COMMITTEES."

APPENDIX F

ORRIN SMITH KIKER JR. has been a photographer for 25 years and holds both the bachelor's and master's degrees from East Texas State University. He has taught photography at North Texas State University since 1960, and has served as faculty adviser for the NTSU yearbook and as photographic adviser for both the yearbook and student newspaper. He has attended many professional-level short courses and seminars in photography and has conducted many others. He has done professional photographic work in both still and movie photography, and is a former member of the University Photographers Association and the National Press Photographers Association.

J. ROY MOSES JR. holds the bachelor's degree in journalism from Southwestern University and a master of journalism from the University of Texas. He has done public relations photography for several colleges and universities, has taught photography at NTSU and Tarrant County Junior College and is a former member of the Michigan Press Photographers Association, the National Press Photographers Association and the University Photographers Association. He has done both still and movie photography professionally, and has won photographic awards from the American College Public Relations Association. He has been a full-time faculty member at NTSU since 1972.

APPENDIX G

North Texas State University
Denton, Texas 76203
Journalism Department

October 31, 1979

TO WHOM IT MAY CONCERN:

We have, this date, previewed a set of approximately three hundred 35 millimeter slides for Jack Roberts in relationship to his dissertation materials.

Although many of the slides lacked a desired degree of technical quality, their content, for the most part, was more than adequate. We kept no accurate count, but estimate approximately 95 percent of the slides were good graphic representations of the professions/activities described. For the slides we considered weak, we discussed alternatives with Jack and believe he will be able to solve most of the graphic representation problems. Some of the activity areas are so abstract, however, it will be exceedingly difficult, if not impossible to achieve a quick-recognition portrayal.

We also feel Jack Roberts' overall concept and goal have considerable merit for practical application, and that adequate funding of such a project could lead to an extremely useful counseling tool.

Smith Kiker Jr.
Asst. Professor
of Journalism

Roy Moses Jr.
Asst. Professor
of Journalism

APPENDIX H

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]LIST
 1  PRINT "THIS PROGRAM WAS DEVELOPED BY JACK ROBERTS (CSCI 501)"
 2  PRINT "THE PROGRAM WILL ACCEPT DATA FROM TWO GROUPS UP TO A LIMIT OF 100"
 3  PRINT "PIECES OF DATA IN EACH GROUP."
 4  PRINT "MEANS, STANDARD DEVIATIONS, AND VARIANCE WILL BE CALCULATED FOR EACH"
 5  PRINT "GROUP.  T TESTS FOR RELATED AND INDEPENDENT SAMPLES, AS WELL AS THE"
 6  PRINT "PEARSON R CORRELATION STATISTICS MAY BE SELECTED FOR CALCULATION "
 7  PRINT "WITH THE APPROPRIATE DATA."
 8  PRINT ""
 9  PRINT "JUST RELAX, TYPE IN THE APPROPRIATE INFORMATION WHEN THE COMPUTER"
 10  PRINT "CALLS FOR IT, AND YOU WILL SOON HAVE THE DATA YOU NEED."
 11  REM  N1 & N2 = NUMBER OF PIECES OF DATA PER GROUP.  M1 & M2 = MEANS OF GROUPS.
 12  REM  A & B ARE THE GROUPS.  S1 & S2 = SUMS OF SCORES.  G1 & G2 = SUM OF SQUARED
 13  REM  SCORES.  L1  & L2 ARE THE SUM OF THE SQUARED DEVIATION SCORES.  V1 & V2 ARE T
      HE VARIANCES.  SA & SB ARE THE STANDARD
 14  REM  DEVIATIONS.  SI = SUM OF A TIMES B SCORES.  SP = SUM OF PRODUCTS.
 15  REM  DS = SUM OF A SCORES - B SCORES.  DX = SUM OF A SCORES - B SCORES SQUARED.
 16  REM  R = PEARSON RESULT.  TR = T TEST RELATED RESULT.  TI = T TEST INDEPENDENT RES
      ULT.
 17  PRINT "------------------------------------------------------------------------"
 18  PRINT ""
 20  PRINT "HOW MANY SCORES DO YOU HAVE TO ENTER FROM GROUP A?"
 30  INPUT N1
 40  PRINT "PLEASE ENTER THE SCORES FOR GROUP A."
 45  DIM A(100),B(100)
 50  FOR I = 1 TO N1
 60  INPUT A(I)
 70  NEXT I
 90  FOR I = 1 TO N1
 91  REM  S1 = THE SUM OF SCORES IN GROUP A
100 S1 = S1 + A(I)
110  NEXT I
111  REM  M1 = THE MEAN OF SCORES IN GROUP A
120 M1 = S1 / N1
121  REM  G1 = THE SUM OF SQUARED SCORES IN GROUP A
122  FOR I = 1 TO N1
123 G1 = G1 + (A(I) ^ 2)
124  NEXT I
130  REM  L1 = THE SUM OF SQUARED DEVIATION (SS) SCORES IN GROUP B.
131 L1 = G1 - (((S1) ^ 2) / N1)
132  REM  V1 = THE VARIANCE IN GROUP A
133 V1 = L1 / N1
134  REM  SA = THE STANDARD DEVIATION IN GROUP A
135 SA =  SQR (V1)
219  PRINT ""
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220  PRINT "HOW MANY SCORES DO YOU HAVE TO ENTER FROM GROUP B"
230  INPUT N2
240  PRINT "PLEASE ENTER THE SCORES FOR GROUP B."
250  FOR I = 1 TO N2
260  INPUT B(I)
270  NEXT I
290  FOR I = 1 TO N2
291  REM  S2 = THE SUM OF SCORES IN GROUP B
300 S2 = S2 + B(I)
310  NEXT I
311  REM  M2 = THE MEAN OF SCORES IN GROUP B.
320 M2 = S2 / N2
321  REM  G2 = THE SQUARED SCORES IN GROUP B.
322  FOR I = 1 TO N2
323 G2 = G2 + (B(I) ^ 2)
324  NEXT I
330  REM  L2 = THE SQUARED DEVIATION (SS)SCORES IN GROUP B.
331 L2 = G2 - (((S2) ^ 2) / N2)
332  REM  V2 = THE VARIANCE IN GROUP B.
333 V2 = L2 / N2
334  REM  SB = THE STANDARD DEVIATION IN GROUP B.
335 SB =  SQR (V2)
340  GOTO 480
400  PRINT "DO YOU WISH TO CALCULATE THE PEARSON R STATISTIC?"
401  PRINT "IF YES, TYPE 1; IF NO, TYPE 0."
405  INPUT W
410  IF W = 0 THEN 600
415  IF W = 1 THEN 420
420  IF N1 <  > N2 THEN 560
425  FOR I = 1 TO N1
430  FOR I = 1 TO N2
431  REM  SI = SUM AB OR SUM OF A SCORES TIMES B SCORES.
435 SI = SI + (A(I) * B(I))
440  NEXT I
441  REM  SP = THE SUM OF PRODUCTS STATISTIC.
445 SP = SI - ((S1 * S2) / N1)
446  REM  R = THE PEARSON RESULT
450 R = SP / ( SQR (L1 * L2))
455  GOTO 555
480  PRINT ""
490  PRINT "-------------------------------------------------------------------"
500  PRINT "                                        GROUP A";"  GROUP B"
510  PRINT "NUMBER OF SCORES ENTERED.....    ";N1;"    "N2
515  PRINT "SUM OF SCORES.....               ";S1;"    "S2
520  PRINT "THE MEAN OF SCORES.....          ";M1;"    "M2
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```
525  PRINT "THE SUM OF SQUARED SCORES.....     ";G1;"     "G2
530  PRINT "THE SUM OF SQUARED DEVIATION SCORES    ";L1;"     "L2
535  PRINT "THE VARIANCE.....                  ";V1;"     "V2
540  PRINT "THE STANDARD DEVIATION .....       ";SA;"     "SB
550  GOTO 400
555  PRINT "THE PEARSON R CORRELATION IS.....     ";R
556  GOTO 600
560  PRINT "THE PEARSON R CANNOT BE CALCULATED FROM THE AVAILABLE DATA.  THE SAMPLES
     ARE NOT OF EQUAL SIZE."
565  GOTO 600
570  PRINT "THE T TEST FOR RELATED SAMPLES CANNOT BE CALCULATED FROM THE AVAILABLE"
571  PRINT "DATA.  THE SAMPLES ARE NOT OF EQUAL SIZE."
575  GOTO 700
580  PRINT "THE T STATISTIC FOR RELATED SAMPLES IS.....     ";TR
581  GOTO 700
585  PRINT "THE T STATISTIC FOR INDEPENDENT SAMPLES IS       ";TI
586  GOTO 1000
600  PRINT "DO YOU WISH TO CALCULATE THE T TEST FOR RELATED SAMPLES?"
601  PRINT "IF YES, TYPE 1; IF NO, TYPE 0."
605  INPUT Y
610  IF Y = 0 THEN 700
615  IF Y = 1 THEN 620
620  IF N1 <  > N2 THEN 570
625  FOR I = 1 TO N1
630  FOR I = 1 TO N2
631  REM  DS = THE SUM OF THE A SCORES MINUS THE B SCORES TAKEN INDIVIDUALLY.
635 DS = DS + (A(I) - B(I))
640  NEXT I
645  FOR I = 1 TO N1
650  FOR I = 1 TO N2
651  REM  DX = THE SUM OF THE A SCORES MINUS THE B SCORES SQUARED.
655 DX = DX + ((A(I) - B(I)) ^ 2)
660  NEXT I
661  REM  TR = THE RESULT OF THE T TEST FOR RELATED SAMPLES.
665 TR = (DS / N1) /  SQR ((DX - DS ^ 2 / N1) / (N1 * (N1 - 1)))
670  GOTO 580
700  PRINT "DO YOU WISH TO CALCULATE THE T TEST FOR INDEPENDENT SAMPLES?"
701  PRINT "IF YES, TYPE 1; IF NO, TYPE 0."
705  INPUT Z
710  IF Z = 0 THEN 1000
714  REM  TI = THE RESULT OF THE T TEST FOR INDEPENDENT SAMPLES.
715 TI = (M1 - M2) /  SQR (((L1 + L2) / (N1 + N2 - 2)) * ((1 / N1) + (1 / N2)))
720  GOTO 585
1000  PRINT "THIS COMPLETES THE PROGRAM.  THANK YOU AND CALL AGAIN!"
1010  END
```

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