

A COMPARATIVE STUDY OF PERSONALITY CHARACTERISTICS
OF ELEMENTARY AND SECONDARY EDUCATION MAJORS:
USING THE CALIFORNIA PSYCHOLOGICAL INVENTORY
AND THE STRONG VOCATIONAL INTEREST BLANK

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CHAPTER I

THE PROBLEM

Introduction

This dissertation reports an investigation of some factors pertaining to personality characteristics of elementary and secondary education majors. Business majors are included as a contrast group but the same factors are investigated with them. The study examines certain variables that are thought to affect the student's choice of a college major in one of the fields of education.

One of the concerns of counselors in the United States and other countries is vocational counseling and the choice of a major leading to the eventual occupation of the counselee. There has been increased emphasis placed on the selection of a major at an early time in the student's life. Berger (4) says the pressure is the result of other students, parents, relatives, teachers, counselors, advisors, college, and the community in general. Parents and others may take lightly the fantasy of the elementary boy who wants to be the President or an astronaut, but by high school they expect him to make a decision.

This feeling of insistence may not be shared by many counselors. More counselors seem to accept the idea that a student will be capable of making his own decision when he understands his abilities, interests, personality and has an adequate concept of himself. Many counselors will allow him time to explore various vocational possibilities while

exploring his feelings about himself.

This kind of approach requires that the counselor have an adequate understanding of factors related to occupational choice. Several theories of vocational choice have been proposed during the past twenty years in an attempt to explain the process. The term vocational development has been proposed since it appears that it is more a developmental process rather than a single choice point. The counselor is the individual who should be able to apply the theoretical knowledge in helping the student arrive at a decision. Menninger says

... The success or failure of youth or man on the job, particularly as he chooses a new job, is determined in no small degree today by school counselors and by personnel workers in colleges, industries, public employment offices, rehabilitation centers and social work agencies. All who serve in these capacities and in these settings hold awesome responsibility for assisting maturing youth and adults with their problems of vocational planning and with search for a satisfying adjustment to occupational life.(61:xvii)

For many years major efforts in understanding vocational choice were directed at the measurement of ability to perform in various occupations. The measurement of intelligence or ability seems to have reached its apex as a factor in the choice of an occupation. Further studies appear to be redundant and there is a shift to the measurement of the non-intellectual factors, believed to be associated with the choice of an occupation.

A survey of the literature, which will be considered in greater detail in Chapter II, indicates the use of interest inventories and personality measures is a major consideration in the non-intellectual factors. Super (81) has utilized the self-concept as a major factor in occupational choice. Roe (64) places an emphasis upon early childhood experiences and the interpersonal relationships with parents as a

major determinant in vocational choice. Tiedeman (91), Ginzberg, Ginsburg, Axelrod and Herma (30), and Holland (42) have contributed theoretical concepts of occupational choice as a function of personality.

The basic assumption underlying this study is that personality characteristics of individuals in a particular major tend to be similar to others in the same major. Further, that personality patterns, including data from both personality and interest tests, of individuals in the same major will differ from individuals in another major. This assumption is consistent with the theoretical model which states that one chooses that major which allows him to implement his self concept by engaging in that major.

The focus of this investigation shall be an attempt to determine the relationship of certain personality traits and interests to the selection of elementary or secondary education as a major. It is believed that this will add to the knowledge of differences among those who elect elementary versus secondary education as a major.

Importance of Study

This study was designed to measure personality traits and interests of elementary and secondary education majors. Since elementary education majors are predominately female students, only women were used in the study. Women students present a unique problem to counselors because of dual-career roles in life. Most college women are preparing for a career in one of the professions, but most of them also expect to be married and raise a family. Because of the dual role expectation, they have typically presented a problem in the interest profile

patterns. They are an important part of the labor force and need to be understood in both roles.

Tyler (92) points out that most girls think quite differently about careers than do boys. They are likely to view a career as a stop-gap until marriage. Women's interests have shown a larger common or general factor than the interests of men. This general factor has been variously called non-professional interests, feminine interest, male association interest and pre-marital interest.

The choice of a major which leads to a particular career is a critical decision for a student to make. The choice and subsequent preparation in a major will likely determine how the individual will spend a large part of his life. If their choice is made prematurely and they find they cannot cope with the program it may be viewed as a failure. The student does not usually think of the choice as a process of vocational development governed by a process of self-discovery and the counselor should help them with this self-knowledge.

More than half of the students seen in the Counseling Center at Oklahoma State University were coded during the initial contact as a vocational problem. Many of these are students attempting to make a choice of major. Each year during the pre-enrollment period many students are referred to the counseling office because they have not made a decision. During the 1966-67 school year, the College of Arts and Sciences enrolled 4,000 students, 503 of which were in the General Program. The General Program has been established to allow those students who have not yet elected a major an opportunity to explore various fields while fulfilling basic requirements. Student Personnel workers in the various colleges of the university must see many

students who have made a decision regarding the general field of study but are having difficulty in a specialization.

It is incumbent upon those persons assigned to positions of counseling that they make every effort to assist the student to arrive at a decision congruent with his potentialities. Prediction of success in a major is a complex problem. How accurately any prediction can be made will depend upon the criteria used and how well these criteria can be translated.

There is considerable evidence that personality and interests play major roles in the selection of a major. The part interest plays has been investigated and is generally accepted. It is increasingly important that counselors and other student personnel workers be cognizant of the research relative to personality as a determining factor in the choice of a major or occupation. It behooves the counselor to understand personality theory in such a way that he can relate it to the choice of a major. Considerable effort has been made in recent years to understand the intricacies of personality related to vocational development and the eventual choices made by an individual.

Statement of the Problem

Understanding the individual has been inherent in the role and function of the counselor. The interaction of ability, achievement, motivation, socioeconomic background, interests, and personality of the individual should be understood in order for him to make a satisfactory choice. The confrontation of the individual with knowledge of self through interpretation of test results and exploration of his feelings will permit him to better understand his strengths and limitations,

the ultimate objective of counseling being growth in self understanding to the point where he is capable of deciding upon a major consonant with his self-knowledge.

Personality as an aspect of occupational choice has been summed up by Darley and Hagenah with the following statement.

... From these various studies, we may derive a few general conclusions and interpretations of use to counselors. First of all, there is support in the research data for some of our cultural stereotypes of personality characteristics of members of various occupational groups; certainly there is evidence that a social factor--defined as greater or lesser with people and social activities--tends to differentiate some of the professions and higher level business occupations. There is evidence also that representatives or potential representatives of various families of occupations place high value on different objectives. The power, prestige, and status associated with high income are dominant themes for individuals with business contact and verbal-linguistic patterns of interest. Income per se is less valued and an altruistic concern for the welfare of others is more valued in those with social service patterns of interest. Intrinsic satisfaction in work itself and greater concern with empiricism and rational understanding of the world loom large as goals for those with primary interests in the physical science fields, and to some extent for individuals whose primary interests are in the biological science fields. (20:132)

The problem investigated by this study deals with personality characteristics of two closely related majors, elementary and secondary education, and whether they can be differentiated. Korn (52) made a study of majors in Engineering and Physical Science using the Strong Vocational Interest Blank and the California Psychological Inventory and found some significant differences between the two groups.

The hypotheses will state the specific investigations that were made, relevant to the variables to be considered in this study.

Description of Population

The population studied was composed of a random sample of female

elementary and secondary education majors. Male students were not included because the overwhelming majority of elementary majors were women. Students were randomly selected from a list of seniors in the final phase of their teacher preparation program. A sample of fifty elementary majors and fifty secondary majors were selected. The secondary majors were selected so that the number was proportionate to the number in the various subject matter fields. Business education majors were eliminated because a third sample of students from the College of Business was to be used as a contrast group.

The sample from the College of Business differs from the education sample in that some junior level students were used to bring the number up to a comparable size. Junior level women were selected who were closest to senior level status in total number of semester hours.

Students were contacted by letter or by telephone and the general nature of the study was explained. They were asked to participate in the study and appointments were made for the testing. Some made appointments and did not show up for testing. At the close of the semester 74 percent of the elementary, 76 percent of the secondary and 70 percent of business majors had responded by taking the tests. It was thought these numbers should be enlarged and students were randomly selected from the summer session population. A comparison of the mean grade point average was made to determine whether a significant difference existed between the summer session sample and the regular sample. No significant difference was found so they were treated as one sample for the study.

Hypotheses

There are four major areas being examined in this study. The first area studied concerns the relationship of interest patterns, as measured by the Strong Vocational Interest Blank for Men, to the three major fields, elementary education, secondary education and business.

The following hypotheses delineate the relationships investigated in this area.

- I. There will be no significant difference in the interest patterns on each of the nine groups of the SVIB among students in the three major fields of study.
- II. There will be no significant differences in the 54 scores of the occupation scales among students in the three major fields of study on the SVIB.
- III. There will be no significant differences in the four non-occupational scales among students in the three major fields of study on the SVIB.

Hypotheses IV defines the relationships examined between the personality traits, as measured by the California Psychological Inventory, of the three major fields: elementary education, secondary education, and business.

- IV. There will be no significant difference in the eighteen personality traits of the C.P.I. among the students in the three major fields.

Definitions and Discussion of Terms

1. SVIB. The 1966 Revision of the Strong Vocational Interest Blank for Men. Unless otherwise noted this

will refer to the men's form.

2. CPI. The California Psychological Inventory.
3. Primary Interest Pattern. This is the interest type within which the profile shows a majority of A and B+ scores on a group or family of occupations on the SVIB. This pattern has been defined by Darley and Hagenah (20).
4. Secondary Interest Pattern. This is the interest type within which the profile shows a majority of B+ and B scores on a group or family of occupations on the SVIB as defined by Darley and Hagenah (20).
5. Other Interest Pattern. This is the interest type within which the profile does not show a pattern defined by the other three patterns, primary, secondary or reject on the SVIB.
6. Reject Interest Pattern. This is the interest type within which the profile shows a majority of scores below the men-in-general shaded area on the SVIB.
7. Elementary Education Major. Student who has indicated this as the major field on enrollment card and is designated as a senior by registrar.
8. Secondary Education Major. Student who has designated secondary education along with some other subject matter major and is designated as a senior by the registrar.

9. Business Major. Student enrolled in one of the four year programs in the College of Business, excluding business education, and designated as a junior or senior by registrar.
10. Family of Occupations. One of the nine major groupings of the SVIB containing closely correlated occupations.
11. GPA. Grade point average based on the 4.0 system used at Oklahoma State University.

Limitations and Assumptions

The nature of the population restricts the generalizations which can be made from the results to women in the majors studied. The interests and personality patterns described are those of students at Oklahoma State University and, therefore, generalizations to other institutions would, of necessity, have to take variations in requirements and students into account.

There are limitations, generally recognized, in the criteria of interest measures and especially personality trait measurement with group type instruments. For this study it is assumed that the instruments used are valid enough to be effective measures of the factors involved. It has been further assumed that variables not controlled in other activities will not significantly affect the study.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter will present a review of the literature relevant to personality characteristics as determining factors in the choice of a college major and a vocation. Since a college major is considered as preparation for a profession or vocation, the literature relevant to measurement of personality in occupations is assumed to be important when studying individuals in the final years of preparation.

Theories of vocational development and choice will be reviewed as well as studies related to occupational traits or characteristics. Specific studies of elementary and secondary education majors or teachers will be emphasized.

General Background

The understanding of individual differences has been primarily the result of a need expressed by the practitioner. Early tests were developed for the practitioners of the schools. The Binet intelligence test was developed to aid the schools in identifying the child who could learn and profit from the school experience. World War I created a need for group tests to screen service personnel and the Army Alpha and Beta tests were developed. The early history of test development contributed much useful knowledge to the practitioners while providing

differential psychologists with knowledge of individual differences. Even though psychologists and counselors are interested in an understanding of the interrelationship of all aspects of behavior, much of the research is directed toward traits. However, through an understanding of traits, the knowledge so gained may be incorporated into theoretical models. The constructs of the model may then be tested as an empirical endeavor to accept or reject the component parts of the model.

Vocational guidance has relied heavily upon the research of trait psychology. Except for a few notable exceptions, such as Carter (13) and Bordin (9), little was accomplished in the way of integrating traits into a theoretical model until the 1950's and 1960's. Since the early 1950's the theories attracting the most attention have been proposed by Super (81), Tiedeman (91), Roe (64) and Holland (42). The emergence of these theoretical formulations has triggered considerable research and has contributed much to the understanding of occupations and vocational development. Brayfield, while recognizing the significance of these theoretical formulations, says that

... the term "theory," as found in the vocational guidance literature, is somewhat pretentious if used in any strict sense. Most vocational choice theories fail to meet the conventional requirement to present a set of tight, interlocking, testable propositions. (10:311)

An alternative to the theoretical models is the use of a conceptual framework. Such a conceptual framework was proposed by a sociologist, two psychologists, and two economists. Blau, Gustad, Jessor, Parnes and Wilcock (6) collaborated in an interdisciplinary approach to occupational choice. In their conceptual framework they point out many variables from their respective disciplines which they believe enter

into the choice of an occupation.

Theoretical Models

Three theories of vocational development and choice will be considered briefly as background for the later review of research studies and to illustrate how personality is integrated into the theory. The emphasis changes from one theory to another, but there are many similarities with personality being one of the notable variables in each of them.

Only those theoretical formulations having relevance to personality as a factor in choice will be considered. They will also be those which are currently considered the most promising by the amount of research being generated by them.

Super's Theory

The theoretical formulations of Super (81) was one of the earliest and has resulted in a number of research studies. He has proposed that the individual selects an occupation as a way of implementing his self concept. The selection of an occupation is a life-long process which he refers to as vocational development. He states that people differ in their interests, abilities and personalities. Because of their various characteristics they have the potential to enter a number of occupations. The occupations generally have enough latitude, in terms of requirements, to allow a variety of individuals in each of the occupations and a variety of occupations for each individual. Because the individual's preferences and abilities are subject to change, his choices and adjustment is a continuous process. The self concept,

however, is relatively stable by adolescence and until late maturity.

The vocational development of the individual has been divided into life stages. The life stages are related to the development of his self concept. The self concept, vocationally speaking, goes through three processes. The first of these is formation which includes a period of exploration of the world and the self. The second process is translation of the self concept into occupational terms. This process is governed by the individual's awareness of his characteristics and the opportunities which he encounters. The final process is that of implementation. During the final process the individual enters an occupation which seems congruent with his self concept. The degree to which the occupation allows an adequate outlet for his personality, ability and other aspects of his personal attributes will determine the amount of satisfaction he achieves from his work.

Super (82) says in his evaluation of personality inventories that they were in disrepute until improvements were made in their construction and an increased knowledge of their appropriate use made them more acceptable. He goes on to say,

They seem to make particularly good sense when viewed as self descriptions, when used to get an understanding of the individual's picture of himself, recognizing that his self-concept may not be closely related to the picture that others have of him nor even to his objectively recorded behavior. The inventory gets at this self concept by asking the examinee to check a long list of descriptive statements, according to whether or not they describe his behavior. (82:228)

Super acknowledges personality variables as an integral aspect of vocational behavior even though he has found very few correlations between the two. Personality traits when viewed as a part of the self concept should provide valuable information to the understanding of

vocational behavior.

Roe's Theory

The study of specific occupational groups through empirical methods preceded a theoretical formulation by Roe (60). She made extensive studies of several groups of eminent scientists, using interview data and projective tests. The life history of the subjects was an important aspect of her studies. There were differences in personality characteristics between several of the groups and in some cases between closely related subgroups.

Roe (66) takes the position of most of the current vocational theorists, believing that occupational choice is a developmental process and not a single choice point.

... the occupational history is a lifelong development, thoroughly interwoven with the life as a whole, the origin and development of interests become a matter of more than theoretical importance. Interests, as an aspect of personality, have a place in any significant personality theory and must be subject to the same developmental principles as any other aspect of personality. Any general consensus on personality theory is, however, lacking, and there is no general personality theory that deals with interests in a way meaningful for the study of occupations. (66:7).

In a revised presentation of her earlier theory Roe and Siegelman (66) state five propositions which they believe represent the origin of interests. The first proposition relates to the limits set by heredity upon development of various characteristics. The second is a statement of the importance of experiences, cultural and socio-economic background upon the development of the inherited characteristics. The third proposition states that the interests and other personality traits are largely a result of experiences channeled in certain directions through involuntary attention. Involuntary attention and the

direction are determined by early satisfactions and frustrations. At this point in the theory, Maslow's theory of needs is used to explain the motivation of behavior. The methods available to the individual and the strength of the needs will determine which needs become the strongest motivators. The fourth proposition states that, "The eventual pattern of psychic energies, in terms of attention directedness, is the major determinant of interests." The fifth proposition is related to the intensity and organization of needs and their satisfaction. These two characteristics of needs determine the amount of motivation that will be expressed in accomplishment.

Roe has organized occupations by groups and levels. Eight groups and six levels is the basis for her classification system. The eight groups have been categorized depending on whether they are person oriented or non-person oriented. Early experiences, especially the interpersonal relationship with parents, is one of the major determinants of interests and occupational choice. Those in Service, Business contact, Organizations, General Culture, and Arts and Entertainment are occupational groups identified as person oriented. Technology, Outdoor and Science are groups identified as non-person oriented.

It is interesting to observe that Roe talks of interests as an aspect of personality. Most writers do not make interests an integral part of personality but treat them separately.

Holland's Theory

One other theory will be given brief consideration because of its reference to personality as an important factor in vocational choice and because it has stimulated considerable research. Holland (42)

proposed a theory of vocational choice which he says, "... is comprehensive enough to integrate existing knowledge and at the same time sufficiently close to observables to stimulate further research."

(41:35)

The terminology of his occupational environments has been changed since he first introduced his theory. The current terms will be used in the following discussion. He states that a person is a product of his genetic make-up, and interaction of his cultural and personal forces, which include his social class, physical environment and significant relationships with others. The individual develops ways of coping or dealing with environmental tasks which become preferred methods.

There are within our occupational structure six types of environments associated with various occupations. Each of these occupational environments represent distinctive social and physical environments and characteristic ability patterns. The six occupational environments are called Realistic, Intellectual, Social, Conventional, Enterprising and Artistic.

Six personality types with the same names can be identified with characteristic patterns of personal development. For each of the six personality types there is a model orientation with characteristic "coping mechanisms, personal traits, vocational and educational goals, life histories, aptitudes and other attributes." (44:273)

The individual, in making an occupational choice, selects the occupational environment he perceives to be most congruent with his preferred method of coping with the environment. "Thus occupational classes designate types of people and, similarly, vocational choice

becomes a function of personality." (45:273) Intelligence and self evaluation determine the level of choice within the six general classes. Self-knowledge, knowledge of occupations, age as a factor in learning of opportunities as well as external factors such as social pressures and economic influences all enter into the adequacy of choice.

Super, Roe and Holland have all included personality as an important variable in their theoretical formulations. There are many instances of overlap in the three theories, each using different terminology to describe essentially the same kind of behavior and vocational development.

The theoretical formulation of this study is based on the three theories discussed above. Occupational choice is a way of implementing the self concept. Students in their senior year of the elementary and secondary education program have implemented their self-concept through the selection of elementary or secondary education as a major. Because there are basic differences in the curricula in the two programs it would be expected that they may appeal to individuals with different personality characteristics. Assuming the CPI reflects the subjects' self perceptions as indicated on the inventory and as suggested by Bordin (9) and Super (82), this study asks the question: Are there significant differences in the personality characteristics of those who choose elementary education and those who choose secondary education?

As a contrast group business majors are included in the study to determine if there are significant differences in the personality of business majors and elementary or secondary education majors. Since business, as a major, is even more different in curricula, a

significant difference might be expected in their personalities.

The assumption is being made that the instruments measure personality characteristics and that the students select a major because they perceive an occupation or major as congruent with their personality; they perceive in others, already in the major or occupation, personality characteristics similar to their own. Holland has stated that

... vocational choice is an expression of personality.
... if we classify together people having similar vocational choices we are also classifying similar personalities together. (45:278)

Roe's assumption that interests are an aspect of personality is assumed in this study and the Strong Vocational Interest Blank is used as the instrument for measuring interests.

Personality and Vocational Choice

There have been numerous research studies based on the relationship between personality variables and vocational choice. Personality is a term that has been interpreted in many ways and most research is based on traits or variables which supposedly determine or influence one's behavior and can be measured by a test.

Although the literature is abundant in studies using other personality measures, there are few research studies related to education majors utilizing the California Psychological Inventory. It was, therefore, necessary to review the literature for reports of other instruments used in a similar manner as the present study. The studies selected are representative of the research which has been done with personality tests.

There is an increased emphasis upon the nonintellectual factors

in research studies. Predictive studies of academic success, based on intellectual factors, continues to be of major concern to researchers. However, personality, as a nonintellectual factor, is becoming more evident as an important variable in conjunction with intellectual factors, as well as a variable in its own right. Predictions based on the intellectual factors alone appear to have reached an apex. In order to improve on them the nonintellectual factors have been included to increase their predictive efficiency. The use of these variables has produced some effective results in accounting for variance otherwise unaccountable.

There is a dearth of research studies relative to the occupational choice of women. Much of the literature reviewed is, therefore, based on studies of men. Some studies using women subjects are reported even though their relevance to the present study may be marginal. It is regrettable that more has not been done in the study of occupational choices of women. Women have become an important and sizeable portion of the labor force and the trend appears to be toward an even greater increase. Research utilizing women subjects is a relatively unexplored field of investigation and it is difficult to explain why more has not been done.

The California Psychological Inventory

Perhaps because it is a more recently developed instrument, the California Psychological Inventory (34) has been used in a limited number of research studies related to teaching and other occupational groups. It has been paired with other tests to identify personality traits of specific groups and as a personality criterion to study

other variables. The prediction of grades and achievement has been selected for study by several researchers.

The California Psychological Inventory has been used in conjunction with the Scholastic Aptitude Test for predicting college grades. Holland (44) used National Merit Scholarship finalists and Certificate of Merit winners as his sample and found that the addition of personality factors increased the multiple Rs two to three times over the zero-order r 's of the SAT alone.

In his study he found the Capacity for Status (Cs), Sociability (Sy), Social Presence (Sp), Self Acceptance (Sa), Responsibility (Re), Socialization (So), Self-Control (Sc), Flexibility (Fx) and Femininity (Fe) scales were significant in both his standard and cross validation samples of boys. Only the Social Presence (Sp) and Socialization (So) scales were significant in both samples for girls.

The Sp, So, Re, Ac and Fe scales are useful in predicting grades both by themselves and with the SAT. The Sp and So scales are most efficient for all four samples of standard and cross-validation samples.

The investigator rightfully emphasized that the students in his sample were gifted individuals and the results may not be generalized to all students. The study does illustrate the relationship of personality and grades or success in college.

A study related to women students in the teacher preparation program was conducted at the University of California, Santa Barbara, to ascertain differences in a number of variables between elementary majors completing the program and three other groups who do not. Durflinger (23) found some differences in means with a scholastic

apitude test; significant differences on the Minnesota Teacher Attitude Inventory, but no significant differences on the Iowa Tests of Educational Development. The California Psychological Inventory was used as one of the non-intellectual instruments. He found few significant differences between the groups. On the Flexibility scale he did find that those completing the program were less flexible than the other groups.

Using a slightly different emphasis in his study, Hunt (48) evaluated the effectiveness of the California Psychological Inventory for differentiating underachievers and overachievers in the teacher education program. He identified two groups of females who were under and over achievers and administered the CPI. The Dominance, Tolerance and Achievement via Conformance differentiated the two groups at the .01 level. Three other scales, Responsibility, Good Impression and Achievement via Independence had "t" values between the .05 and .01 levels. The overachievers were higher on all of the significant scales. He concluded from his study that the CPI could be used effectively as a supplement to the admissions tests at Ball State Teachers College.

There appears to be support for the use of non-intellectual variables as a predictor of academic achievement. This seems to be especially true if used with the intellectual variables in a multiple regression system. Since academic achievement is important to success in a college major, these studies were included to illustrate the value of the non-intellectual factors.

A study having relevance to personality as a factor in choice, but not designed to measure them in occupations, was conducted by Nugent (62). He used the Kuder and Differential Aptitude Test scales

to identify students with congruent interests and abilities. He compared the group with another group with discrepancies in interests and ability. The California Psychological Inventory was used as a measure of personality adjustment. He found that the congruent groups could be described as more realistic, resourceful and productive. They were more self-understanding, used good judgment and had a better sense of well being. The discrepant group had more self doubt, were more unrealistic, were more constricted in thought and more inefficient in use of resources.

This study appears to have important implications for the counselor working with students considering majors or occupational choices. It might raise the question whether the maladjustment is a result of the incongruence of ability and interest or whether the latter incongruence may have created conflicts resulting in the maladjustment on the CPI.

One of the few studies related to personality characteristics of teachers was conducted to identify CPI scales that would differentiate between good and poor teachers. Hill (41) identified two groups of student teachers who were rated as "good teachers" or "poorer teachers" by their instructors. Hill selected Dominance, Achievement via Conformance and Psychological — mindedness from the CPI scales and compared the scores of the two groups. He found no significant differences in the two dichotomized groups on the Dominance or Psychological — mindedness scales. These scales, he concluded, could not be used to predict the excellence of student teachers. However, with the Achievement via Conformance he found the "better" teachers significantly higher at the .05 level.

Korn (52) made a study of the differences between two closely related majors, using the CPI and the Strong Vocational Interest Blank (SVIB). Engineering and physical science majors were used with a general studies group who had not decided upon a definite major. On the CPI he found significant differences at the .05 level on seven of the scales and at the .01 level on two of the scales. Physical science majors were significantly higher on the Femininity, Capacity for Status, Responsibility, Achievement via Independence and Flexibility. Engineering majors were significantly higher on Sociability, Social Presence and Communality.

A study somewhat similar to Korn's was carried out by Obst (63). Home economics women and a "women in general" student group were used in her study. Obst hypothesized no significant differences between the two groups on measures of personality, interests, ability and socio-economic status. Of special interest to the present study are the results of the California Psychological Inventory. Obst found significant differences at the .05 level on the following CPI scales: Capacity for Status, Intellectual efficiency, Socialization, Self-Control, Communality and Sense of Well-being. Obst used an earlier form of the CPI and the names of the scales listed are the current scale names rather than the ones reported in her study.

Other Personality Measures

The Minnesota Multiphasic Personality Inventory (MMPI) has been used in many studies. It is probably one of the most thoroughly researched instruments available and has been used to study personality characteristics of different majors and occupational groups.

Sternberg (74) used the MMPI, the Kuder and the Allport-Vernon Study of Values as measures and found that majors differed from each other on at least one of the factors. His majors were grouped in broad categories and the number of factors is greater than most other studies. The broad groups produced differences which might not be expected to occur when more closely related majors are considered.

Harder (38) used male senior students enrolled in Business, Education and Engineering. When he compared the mean scores of the three groups, the Clinical scales did not reveal significant differences which could be used in describing personality characteristics. Keys were developed by means of an item count which did distinguish the three groups on the basis of their responses to the items.

Two studies are reported by Lough (57, 58), using the MMPI as an instrument to determine differences in students in various fields. The results do not indicate any statistically significant differences but she does report some trends noticed in the studies.

In her first study Lough (57) tested 94 Elementary Curriculum majors and 91 Music Education majors. She wanted to determine whether there were significant differences between the two groups and the general population norms; whether the test might be useful in selection and whether the test indicated maladjustments in the groups. Although there were no significant differences, the percent of elementary students above a T-score of 70 was greater on the psychopathic, paranoia and schizophrenic scales. Music education students had a higher percent above the T-score of 70 on hypomania, hysteria and paranoia. The combined groups show the highest percent above T-score of 70 on hypomania, hysteria, paranoia, psychopathic deviate and schizophrenia

in that order.

The second study reported by Lough (58) used the same students as above, but also included 54 liberal arts students and 61 cadet nurses. She did not find any significant differences in the four groups, but reports trends from the study. Those of significance to the present study are generally from the first study. However, the nurses were the most stable group. All groups are on the whole normal and stable individuals. They all have a slight tendency to score above a T-score of 50 on the Hypomania scale.

In another study using the MMPI, Gough and Pemberton (35) identified student teachers who were most successful in practice teaching. Eighty-nine males and 58 females were included in his sample. They were divided into three groups or levels of success. The females yielded no significant differences on the scales of the MMPI variables. However, the males considered most successful scored lower on the Hysteria and Psychopathic Deviate scales and were higher on the Psychological Aptitude scale. They were able to identify "fifteen signs" which were tested with their sample. Eight of them revealed some discriminatory potential. The two that were most discriminating were a Paranoia T-score of 50 to 56 and a Hypomania score between 48 and 60.

Gowan and Gowan (37) used the MMPI as an instrument for identifying teachers with potential for success. They established four criterion groups in their study. A group of males was identified as able or weak according to grades or interview impression. A group of females was selected by their practice teaching grades. A group of females was selected by interview impression of test data, health, speech and an

interview. The fourth group was composed of experienced teachers selected on the basis of ratings given by their principal or superintendent.

Item counts were made for each of the groups after being divided into high and low subgroups. A teacher prognosis scale was developed consisting of 98 items. Further cross validation studies indicated the scale has promise as a method of identifying teachers with potential.

This study, along with Harder's (38), indicates that scales based on item count may be a method of considerable merit in personality studies of occupational groups and even successful individuals within those groups.

A very comprehensive study of 1,700 credential and degree candidates in teacher training was conducted by Maclean, Gowan and Gowan (59). Although a battery of tests was used in the study, only the results of the MMPI will be reported. They found that both men and women were slightly higher on the Hysteria, Psychopathic Deviate, Schizophrenic and Hypomania scales. The authors interpreted these slight elevations as a reflection of self control, absence of social fear, scholarly withdrawal or idealism and energy. The men scored in the feminine direction in interest on the Masculinity-Femininity scale.

The results of their study are almost identical to those of Lough's (57, 58) reported earlier. Both of the studies report slight elevations on the clinical scales of Hysteria, Psychopathic Deviate, Hypomania and Schizophrenic. For the combined group of music education and elementary education students, Lough also reported Paranoia as being elevated.

Blum (7) made a study of male students in the five schools of education, law, journalism, medicine and engineering. He used the MMPI and the SVIB and tested for significant differences in personality and interests in the various professional schools. The MMPI yielded differences so small as to be statistically insignificant. The results of his study led him to conclude that the MMPI has little value in the selection of individuals more suited for one occupation than another.

In a study similar to those already reviewed, Tanner (89) selected subjects in practice teaching who were rated superior or inferior by faculty members. He narrowed the two groups down in size by using the Minnesota Teacher Attitude Inventory (MTAI). Those rated superior by faculty and with a percentile rank of 45 or above on the MTAI constituted his final superior sample. Those rated inferior by faculty and with a percentile of 40 or below on the MTAI made up his final inferior sample.

He administered the MMPI, the SVIB and three other instruments to the experimental groups. On the MMPI the K scale, which indicates a defensive test taking attitude or a desire to put themselves in a good light, was significantly higher for both the superior men and women. The women could also be separated on two other scales of the MMPI, Depression and Psychasthenia. The superior women scored significantly lower on these two scales of the MMPI.

Using an MMPI scale, developed from other empirical studies to identify teachers described as "warm," "friendly" and "rapport building," Sheldon, Coale and Copple (69) tested the hypothesis that there would be significant differences on other tests if the scales were measuring a personality configuration of a "warm teacher."

The researchers administered the Allport Study of Values, the Edwards Personal Preference Schedule (EPPS), the California F Scale, the Wechsler Adult Intelligence Scale (WAIS) and 10 cards from the Thematic Apperception Test (TAT). The results indicated significant differences in all tests except the Allport Study of Values.

Of the twenty students in the study, the ten highest on the empirical scales were described as more intelligent (WAIS). They were higher on need Affiliation and Dominance, and lower on need Aggression, Succorance and Abasement as measured by the EPPS. They were less authoritarian on the California F Scale. On the TAT some of the needs were reversed when compared with the EPPS. The higher students were significantly lower on Dominance and significantly higher on Aggression than the lowest students.

The Edwards Personal Preference Schedule, which is based on a theory of needs, has been used quite extensively in research studies related to personality of teachers and teacher candidates. Those studies which seem to have relevance are reviewed to demonstrate the value of personality instruments and to lend background for the present study.

Cook, Linden and McKay (14) used the EPPS and the Guilford-Zimmerman Temperament Survey to identify personality characteristics of in-service and prospective teachers. They found several characteristics which they identified as Docility, Dependency, Authoritarianism, Compulsive Conformity, Introversion-Extroversion, Avoidance and Discomfort with heterosexual activity.

Jackson and Guba (49) carried out a study, similar to the one just mentioned, using a group of veteran teachers and a group of novice

teachers. The EPPS was used as a measure of need structure and they found some highly significant differences between the two groups. Veteran teachers scored significantly higher on Deference, Order and Endurance, but significantly lower on Exhibition and Heterosexuality.

They point out that the veteran teachers may differ from the novice teachers because of the norms which were based on liberal arts students of college age. The adult norms, which are now available in the test manual, were not available at the time of their study. The mean age of the veteran teachers was 34.9 years and the novice teachers just beginning their teaching were closer to the age of the liberal arts student norms. The novice teacher did not deviate significantly from the norm average.

Elementary and secondary education teachers were studied by Lang (54) to determine motives in selecting their particular level. He hypothesized that elementary teachers would emphasize the mothering aspect of teaching as a motive and secondary teachers would emphasize the academic and intellectual facets of teaching. Using the Lang Scale of Motives for Teaching, he found no significant difference in the motives between the two groups. The elementary teachers did manifest a greater need Nurturance and a lesser need Achievement than the secondary teachers on the EPPS.

Garrison and Scott (28) made a study very similar to Lang's using students preparing to teach elementary and secondary grades. They found significant differences in the need Achievement, need Nurturance and need Succorance. The secondary majors scored higher on need Achievement and the elementary majors higher on the other two needs.

The results of these studies tend to confirm the hypothesis that

there are differences in needs of elementary and secondary education majors as measured by the EPPS.

A recent study, of special significance to the present one, was conducted by Elton and Rose (24). They used entering freshman girls, who had been given the Omnibus Personality Inventory (OPI) and the American College Test (ACT), as their subjects. Using the vocational choice made by the subjects, at the time of the ACT administration, they categorized the choices into eight fields: social-religious-educational, administrative-political-persuasive, business and finance, scientific, medical, arts and humanities, don't know, and not listed.

A multiple-discriminant analysis was used to determine whether the groups should be thought of as arising from a single population or from two or more populations. They found that both personality and intellectual differences could be identified to distinguish between the various groups. Two dimensions accounted for most of the variance. The first dimension, influenced most by ACT composite and Scholarly Orientation, places the field of Arts-Humanities farthest to the left and Business-Finance farthest to the right on the intellectual continuum. Social-Religious-Educational are slightly to the right of the center on the continuum. On the second dimension, influenced most by Scholarly Orientation, Masculine Role and Tolerance and Autonomy, the greatest separation is between the Administrative-Political-Persuasive field and the Scientific field. There was no significant difference on this dimension between the Social-Religious-Educational group and the Business-Finance group. Scholarly Orientation, a scale of the OPI, was the single most discriminating of the variables.

Personality and the Strong Vocational
Interest Blank

It will be recalled that Roe (65) talks of interests as an aspect of personality. Darley and Hagenah (20) in their excellent review of research related to personality and interest take the more popular view of separating them but tying them closely together. They say "... that personality factors may be determinants of measured interests, or of occupations entered, or of occupational success." (20:103) Much research has been conducted to demonstrate the effectiveness of the SVIB in the choice of an occupation or major leading to an occupation. There can be little doubt about the usefulness of the SVIB when it is used with men. However, the women's form of the SVIB seems to leave something to be desired.

Little has been done in the measurement of women's interests. The dearth of studies related to women's interests is strikingly illustrated by a publication of the University of Minnesota (94) which lists only 64 references as compared to almost 500 for the men's form.

Even more striking is an almost complete lack of studies using the men's form of the SVIB with women. Cronbach (18) in his listing of interest inventories has this to say about the women's form:

... The instrument has not shown satisfactory validities and is rarely used. In counseling women who plan to enter occupations for which the men's blank is scored, it is preferable to use the men's blank. (18:438)

It has been the present writer's observation in his contacts with counselors that this practice has been followed by many practitioners in the field. Laime and Zytowski (53) refer to Strong's suggestion that women with a masculinity-femininity score of about 30 or less on the women's form be administered the men's form on the grounds that

such women have interests more similar to men's. They state that "... it has become a routine practice in many counseling centers." In their review of the literature, related to the SVIB, Darley and Hagenah offer the following suggestion:

From our own clinical experience, we would offer a somewhat different suggestion. For women showing high degrees of career motivation, maturity and ability, we have found the administration of both the men's and women's blank most helpful. The men's blank covers a wider range of families of occupations and deals with a greater number of specific occupations. (20:71)

Seder's (67) study was conducted to determine whether women engaged in the same occupations as men differ significantly on the men's form of the SVIB. Using as subjects 100 life-insurance saleswomen and 100 women physicians, she administered both the men's form and the women's form of the SVIB. There were no significant differences between the men and women physicians nor men and women life insurance salesmen/women on either form of the SVIB. Correlations between physicians keys for the women physicians is .68 and the correlation for the life insurance saleswomen on the life insurance keys is .72. Using the other scales, common to both the men's and women's forms of the SVIB, the correlations for the two groups of subjects were consistently high, ranging from .50 to .80. The one exception was the lawyer scale which only correlated -.03 and +.06 for the physicians and saleswomen groups respectively. Seder used factor analyses and made a comparison of item weights for the two forms. Her conclusions sum up the results of her study:

Analysis of the scores of the two groups of professional women on the Vocational Interest Blank and Vocational Interest Blank for Women and of the scoring keys for these two blanks show that the interest of men and women engaged in the same occupation tend to be similar. ... At least all indications of this study are that differences between sexes

in an occupation are usually less frequent and less important than similarities. (67:272)

The results of Seder's study caused Strong (77) to conduct a similar study using samples of 100 men and 100 women. He constructed scoring keys based on the 250 items common to each form of the SVIB. His results indicated high agreement on the artists scale; the physicians scale indicated similar mean scores, but the correlation was not very high; and the teachers scale correlated .80 but the mean was quite different. He found the YMCA or YWCA secretary, life insurance salesperson and lawyer differed considerably. Strong's conclusions were that differences were such that he recommended that women should be administered the women's form and the men the men's form.

Laime and Zytowski (53) tested fifty female clients of the counseling center with both the men's and women's form of the SVIB. Using the 13 scales common to both forms, they determined means, standard deviations and correlations. Their results are interesting in that the women had a higher mean on the men's form, on all but one scale, than on the women's form. The increase in mean scores resulted in letter rating changes from a lower to a higher letter rating. The one scale with a lower mean, Office Worker/Manager, changed one letter rating lower on the men's form. Laime and Zytowski refer to an article by Carter using high school girls as subjects with results in the opposite direction. It is reasonable to assume that the girls tested by Laime and Zytowski are more professionally oriented since they were college students and therefore the results would differ.

Getzel and Jackson (29) list 151 references in the chapter "The Teacher's Personality and Characteristics." They are references which were selected from a list of more than 800 appearing since 1950. It is

evident that the teacher's personality has been studied by many researchers.

The review of literature on the preceding pages has covered the studies believed to be relevant to the type of research similar in nature to the present study.

CHAPTER III

METHODS AND PROCEDURES

Selection of Sample

The sample population for this study was selected from the College of Education and the College of Business. The data was collected primarily during the spring semester of the 1966 - 67 school term. A small number of students were added during the summer session of 1967 to increase the number in each of the three groups being studied.

The education samples were selected from the files in the College of Education. The general requirements which apply to both of the education samples would be those established by the College of Education for admission to teacher education or a certification program. These requirements, as stated in the university catalog, are as follows:

1. Satisfactory scores on examinations in the areas of English Usage, English Composition, Mathematics, Science, and Social Studies.
2. Satisfactory performance on a speech test.
3. Over-all grade point average of 2.0 or above for secondary education and 2.3 or above for elementary education.
4. Satisfactory personality for teaching.
5. Satisfactory health and physical condition.
6. Filing of an application for admission to teacher education. The above conditions normally should be met by the completion of the sophomore year.

Students transferring at the beginning of the junior year must complete these requirements during the first semester on campus. The student's application for admission to teacher education is reviewed by a screening committee appointed by the Council on Teacher Education.

Item 4 of the above criteria, "Satisfactory personality for teaching." has never been satisfactorily nor thoroughly implemented in any formal procedure.

The Secondary Sample

The students in the secondary sample were selected in proportion to the number of their specialized area of concentration. Some of the secondary majors are enrolled in other colleges of the university and receive their professional education courses through the College of Education. In order to have the representation of the specialized fields, the list of students planning to do their student teaching was obtained from the Director of Student Teaching. The number of women in the various fields of concentration was determined and the secondary education sample was selected randomly in proportion to that number.

By the close of the semester 37 students had responded to the request to take part in the study. Eight additional students from the summer session were added to bring the total secondary sample to 45.

The over-all grade point average was not a factor in the selection process. It was thought that if the students were representative their grade point averages would not differ significantly. The general requirements of the university made the three groups comparable in this respect.

The Elementary Sample

The students in the elementary sample were selected randomly from the list of senior women in the College of Education. A sample of 38 elementary students had been tested by the end of the semester. Ten more were collected during the summer session to bring the total to 48.

The Business Sample

Business majors were selected from the list of seniors obtained from the Office of the Dean of Business. Since this group was included as a contrast group to the two education samples, business education majors were excluded from the sample. The number of female business majors with senior status was insufficient for the desired sample. The list of juniors was secured and those with the greatest number of hours were selected to make up the desired number. The sample was not randomly selected but represents all of the seniors and those juniors closest to senior status.

Thirty-five students responded to the request to take part in the study by the end of the semester. This number was increased, during the summer session, by 10 making a total sample of 45 students.

Students in the College of Business are expected to meet the general requirements regarding over-all grade point average. A grade point average of 2.0 is required for senior level students. Of the juniors selected one student had an over-all grade point average of 1.96 and one other had 1.89. All others had a 2.0 or better grade point average.

② Method of Data Collection

After securing names of the education sample groups each of the students was sent a letter (Appendix A) asking her to participate in the study. Follow-up letters were sent if they did not respond within ten days. Arrangements were made with the University Testing Bureau to do the testing during the regular school hours. The writer did some of the testing in a conference room during the evening hours for those who could not complete the instruments at the Testing Bureau.

The business students were contacted by letter (Appendix A), and a follow-up telephone call. The same arrangements were made for testing this sample, either at the University Testing Bureau or in a conference room at the Student Union.

Both tests are untimed so they had as much time as needed to complete them. Of those tested by the writer, most completed both instruments in approximately one hour and 45 minutes.

The Instruments

The Strong Vocational Interest Blank for Men

The Strong Vocational Interest Blank for Men was revised in 1966. This was the form used for measuring the interests of the subjects. The men's form was used because it provides more scales than the women's form and the groups or "families of occupations" are clearly defined. There is evidence that the men's form may be used effectively with women in the identification of interests (18, 20, 53, 67). Seder (67, 68) used both the men's and women's forms to test women physicians and life insurance saleswomen. She found that the data offered no

important differences between the interests of men and women in the professions studied.

In his discussion of the women's form, Super (83) indicates that "... it is more difficult to differentiate women on the basis of their interests than it is men." However, Cronbach (18) in his chapter on interest inventories concludes that the women's form does not show satisfactory validities and suggests the use of the men's form, especially in counseling women who plan to enter an occupation for which the men's blank is scored.

The SVIB was first published in 1927. In a University of Minnesota (94) publication there are 487 references given for the men's form and 64 references for the women's form. This bears out a statement by Harmon (39) that "The measurement of women's interests has attracted less attention than the measurement of men's interests." The SVIB is one of the most thoroughly studied and understood instruments in use today. It is regrettable that more has not been done in understanding women's interests.

The 1966 revision of the SVIB retains most of the characteristics of the older form. In the revision 109 of the 400 items have been replaced because they were out of date or did not effectively separate occupations. An additional 50 items were rephrased to bring them up to date and in some instances to lower the reading level. The scoring system has been simplified "by reducing item weights from ± 4 to ± 1 ." (78:51) There has been considerable research to indicate that the change in scoring system does not change its comparability to the older form.

Some new occupational scales have been added based on recent

criterion groups. Most of the scales are based on the criterion groups tested in the 1930's by Strong. Research has indicated substantial similarities in interest patterns then and now.

The men-in-general reference group for the revised form has been changed to include a sampling of men from a wide variety of occupations. The shaded area on each scale has been changed to represent the middle one-third of the men-in-general group rather than a chance area.

There are eleven occupational groups on the 1966 revision. These groups which are often used by counselors have been labeled as I. Biological Science, II. Physical Science, III. Technical Supervision, IV. Technical and Skilled Trades, V. Social Service, VI. Aesthetic-Cultural, VII. C.P.A. Owner, VIII. Business and Accounting or Business Detail, IX. Sales or Business Contact, X. Verbal-Linguistic and XI. President, Manufacturing Concern. There are 54 separate occupational scales which make up the various groups.

Numerous studies have been conducted over the years to test its reliability. Test-retest data are reported in the SVIB Manual (78) over varying periods of time. These vary from .91 with relatively brief (30 days) periods of time to .56 over a 30 years period of time.

The concurrent validity has been "continued membership" in an occupation for the SVIB scales. To establish the validity of the scales it has been demonstrated that they do separate the groups measured. The percent overlap statistic is reported to indicate the degree of separation for the various scales. The percent overlap ranges from 15 to 52 with a median of 31 percent overlap.

The non-occupational scales of the SVIB include the Specialization Level scale, the Occupational Level scale, the Masculinity-

Femininity scale and the Academic Achievement scale. According to the manual the Specialization Level scale indicates a desire to narrow one's interests by specializing through advanced study. The score appears to have relevance for students contemplating graduate study.

The Occupational Level scale differentiates unskilled workers from the men-in-general group. Low scores indicate interests similar to those of an unskilled worker. This scale is often considered an indication of "drive" or level of aspiration.

The Masculinity-Femininity scale was developed by comparing the interests of men and women. High scores indicate more masculine interests and low scores more feminine interests.

The Academic Achievement scale is a new scale on the 1966 revision of the SVIB. The scale is "an attempt to identify patterns of interests associated with good scholarship." (78) The validation group was 462 freshmen men. Those in the top 40 percent were compared with the bottom 40 percent based on high school rank and first year college grade point average. Within the validation sample a correlation of .52 was achieved with grade point average. However, in the cross-validation sample there was a shrinkage to .36 with grade point average. It is admittedly only moderately effective.

The California Psychological Inventory

The California Psychological Inventory (34) was the instrument selected to measure personality variables in this study. After a review of the major tests, the CPI seemed most appropriate for a college population. This study was designed to be a search for variables which might differentiate elementary and secondary education

majors, therefore all of the 18 scores provided by this instrument were included in the analysis.

The California Psychological Inventory Manual (34) states that there were two goals in its development. The first of these was the use and development of descriptive concepts possessing broad personal and social relevance. The second goal was devising subscales which were brief, accurate and dependable for identifying and measuring variables included in the inventory.

The inventory has been described as useful with "normal" subjects rather than the psychiatrically disturbed. The scales are those considered important for social interaction and social living.

The eighteen scales are divided into four broad categories which seek to emphasize psychological and psychometric clusterings existing among them. The four categories and scales are described as follows:

Class I. Measures of Poise, Ascendancy and Self-Assurance.

1. Do (dominance) To assess factors of leadership ability, dominance, persistence, and social initiative.
2. Cs (capacity for status) To serve as an index of an individual's capacity for status (not his actual or achieved status). The scale attempts to measure the personal qualities and attributes which underlie and lead to status.
3. Sy (sociability) To identify persons of outgoing, sociable, participative temperament.
4. Sp (social presence) To assess factors such as poise,

spontaneity, and self-confidence in personal and social interaction.

5. Sa (self-acceptance) To assess factors such as sense of personal worth, self-acceptance, and capacity for independent thinking and action.
6. Wb (sense of well-being) To identify persons who minimize their worries and complaints, and who are relatively free from self-doubt and disillusionment.

Class II. Measures of Socialization, Maturity, and Responsibility.

7. Re (responsibility) To identify persons of conscientious, responsible, and dependable disposition and temperament.
8. So (socialization) To indicate the degree of social maturity, integrity, and rectitude which the individual has attained.
9. Sc (self-control) To assess the degree and adequacy of self-regulation and self-control and freedom from impulsivity and self-centeredness.
10. To (tolerance) To identify persons with permissive, accepting, and non-judgmental social beliefs and attitude.
11. Gi (good impression) To identify persons capable of creating a favorable impression, and who are concerned about how others react to them.
12. Cm (communality) To indicate the degree to which an

individual's reactions and responses correspond to the modal ("common") pattern established for the inventory.

Class III. Measures of Achievement Potential and Intellectual Efficiency.

13. Ac (achievement via conformance) To identify those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior.
14. Ai (achievement via independence) To identify those factors of interest and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors.
15. Ie (intellectual efficiency) To indicate the degree of personal and intellectual efficiency which the individual has attained.

Class IV. Measures of Intellectual and Interest Modes.

16. Py (psychological-mindedness) To measure the degree to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others.
17. Fx (flexibility) To indicate the degree of flexibility and adaptability of a person's thinking and social behavior.
18. Fe (femininity) To assess the masculinity or femininity of interests. (High scores indicate more feminine

interests, low scores more masculine.) (34:12-13)

The CPI is an instrument being used quite extensively in College Counseling Centers. Goodstein, et. al. (33) studied the value of the CPI for diagnostic usefulness in a university counseling service. In their discussion of the research they make the following comments.

The results provide considerable support, therefore, not only for Gough's suggested approaches to interpretation of the CPI, but also for the use of these methods in a university counseling service setting. ... if used as a screening instrument in the student personnel program, the CPI can identify potential counseling cases for possible referral to the counseling service. Moreover, it can specify whether an individual's problem is more likely personal or vocational-educational in nature. (33:152)

Eleven of the eighteen scales are based on empirically derived scores which differentiate defined criterion groups. Four are based on judgments of the author, but refined by an analysis of internal consistency. The other three scores were derived empirically to detect those individuals faking good or bad or in such a manner which would make the other scores in the test doubtful in validity.

The test-retest reliabilities range from .38 to .75 for the 18 scales based on high school subjects. The median for all scales is .68. These are based on a one year test-retest period of time.

Kelly (50) in his review of the CPI says

The manual does not report any reliability estimates based on a single administration, but presumably these would be higher than the test-retest consistency coefficients noted above, and hence sufficiently high for both group and individual use. (50:168)

Procedures

The basic procedures followed in this study are as follows:

1. Select the sample population as discussed earlier in

this chapter.

2. Administer the SVIB and the CPI.
3. Analyze the SVIB profile sheets for each member of the study population and classify each of the nine groups as primary, secondary, reject or other.
4. Analyze the results of the group analysis as they relate to each of the three majors, elementary education, secondary education, and business.
5. Analyze the results of the 54 scales as they relate to each of the three majors, elementary education, secondary education, and business.
6. Analyze the results of the four non-occupational scales as they relate to each of the three majors, elementary education, secondary education, and business.
7. Analyze the results of the 18 scales of the CPI as they relate to the three majors, elementary education, secondary education, and business.
8. Draw conclusions and state their implications for use in future counseling of students attempting to make a choice of major concentration.

Treatment of Data

The nine group patterns, 54 occupational scales and four non-occupational scales from the SVIB and the 18 scales from the CPI were the variables obtained for each of the 138 students included in the study.

The statistical treatment used was the Kolmogorov-Smirnov two

sample test. This "is a test of whether two independent samples have been drawn from the same population." (70) Siegel goes on to state

... If the two samples have in fact been drawn from the same population distribution, then the cumulative distributions of both samples may be expected to be fairly close to each other, inasmuch as they both should show only random deviations from the population distribution. If the two sample cumulative distributions are 'too far apart' at any point, this suggests that the samples come from different populations. Thus a large enough deviation between the two sample cumulative distributions is evidence for rejecting H_0 .
(70:127-128)

In his chapter related to choice of a statistical test, Siegel (70) points out that personality tests often result in scores which are in reality ranks. The numerical score may make them appear stronger than ranks, but that they do not generally meet the requirements of higher level measurement and should be viewed as ordinal in nature.

The scales of the CPI were originally validated by correlating scores with "staff ratings," "most and least" dominant students, "outstanding leaders" and other criterion which raises the question of the scale scores being considered stronger than ranks.

The same issue could be raised with the SVIB since the criterion generally used for validating the scales for this instrument has been "continued membership in an occupation." The use of letters A, B+, B, B-, C+ and C clearly indicates a system of ranks rather than interval measurement.

The Kolmogorov-Smirnov has a power efficiency of about 96 percent for small samples with a slight decrease as the sample size increases. When compared with the chi-square or the median test the Kolmogorov-Smirnov test seems more powerful in all cases.

All analyses were made with a test of significance set at the .05

level for rejecting the null hypothesis. The two tailed test was used since the hypotheses were not stated to predict direction.

CHAPTER IV

STATISTICAL TREATMENT OF THE DATA

This study was conducted to answer the following questions:

(1) Can measured personality and interest characteristics be identified which will differentiate elementary education and secondary education majors and (2) Can these same measured characteristics differentiate business majors from elementary and secondary education majors?

The California Psychological Inventory and the Strong Vocational Interest Blank were administered as measures of personality and interest to the three major groups. The California Psychological Inventory measures 18 personality factors and the Strong Vocational Interest Blank measures interests on 54 occupational scales and four non-occupational scales.

This chapter will present the findings of the study to determine whether significant differences appear among the elementary education, secondary education and business majors. The five per cent level of confidence was used to determine significance on the hypotheses under consideration although other levels are reported if they were significant beyond the five per cent level of confidence.

The results of this study were analyzed according to the procedures outlined in chapter three. The first step of the analysis was the classification of each SVIB profile according to primary, secondary, reject or other pattern for the nine groups. It will be noted that

Group VII and Group XI do not appear in the analysis. These two groups consist of a single occupational scale. The method, reported by Darley and Hagenan (20), of combining single-occupational groups with another group, with which it has the highest intercorrelation, was used in this study. Group VII, CPA Owner, was combined with Group X, Verbal-Linguistic. The average intercorrelation with this group is .41. The other single scale group is XI, President, Mgf. Concern, which has the highest average intercorrelation of .56 with Group IX, Sales or Business contact.

Table I indicates the percent of occurrence of the various patterns for the three major fields of elementary education, secondary education and business. The primary patterns for elementary education show a concentration in the Aesthetic-Cultural (45 percent) and Social Service (30 percent) groups. The number of other primary groups combined represents only 25 percent of the total number. The secondary education group, however, shows a greater variation in primary patterns. Secondary majors show a concentration in the Aesthetic-Cultural group with 45 percent. Social Service contains 17 percent of the primary patterns which is considerably less than the elementary majors. The Verbal-Linguistic group contains 20 percent of the primary patterns.

The majors in business had 41 percent of their primary interest patterns in the Business and Accounting group and 19 percent in the Business Contact group, which together represent 60 percent of the primary groups. Social Service and Aesthetic-Cultural, the largest percents for the education majors, represent only 26 percent of the total primary groups for business majors. Among elementary and secondary majors ten percent is the largest occurrence of primary

interests in the business groups (VIII and IX) compared with the 60 percent of business majors.

TABLE I

PERCENT OF OCCURRENCE OF REJECT (R), OTHER (O), SECONDARY (S) AND PRIMARY (P) PATTERNS IN THE NINE OCCUPATIONAL GROUPS FOR THE ELEMENTARY AND SECONDARY EDUCATION AND BUSINESS MAJORS

Occupational Group	Elementary				Secondary				Business			
	R	O	S	P	R	O	S	P	R	O	S	P
I Biological Science	5	22	5	2	7	17	12	8	18	15	0	0
II Physical Science	20	12	0	0	19	10	5	0	24	10	3	0
III Technical Supervision	24	7	4	2	17	14	0	0	18	12	5	2
IV Technical Skills	21	11	0	0	22	8	2	0	15	12	7	5
V Social Service	0	12	14	30	1	12	19	17	7	13	10	13
VI Aesthetic-Cultural	0	4	20	45	0	6	16	45	2	11	25	13
VIII Business & Accounting	19	7	14	0	19	9	2	5	4	5	17	41
IX Business Contact	7	14	20	4	9	15	19	5	6	9	17	19
X Verbal-Linguistic	4	11	23	17	6	9	25	20	6	13	16	7

Looking at Table I it is possible to detect some trends in patterns, but to determine the significance of the results it is necessary to test them statistically. The Kolmogorov-Smirnov two-sample test was made between elementary and secondary education majors; elementary education and business majors; and secondary education and business majors. The two-tailed test was used with all samples since the hypotheses being tested were not predictive of direction.

The Kolmogorov-Smirnov is concerned with the agreement between two cumulative distributions. Cumulative frequency distributions

were made for each sample with the same intervals for both samples. The interval having the largest cumulative deviation between the distributions is focused upon and tested by the following formula:

$$D = \text{maximum } [S_{n_1}(X) - S_{n_2}(X)]$$

$S_{n_1}(X)$ represents the observed cumulative step function of one of the samples.

$S_{n_2}(X)$ represents the observed cumulative step function of the other sample.

The maximum absolute value of D is found regardless of direction with the two tail test. The value of D is then compared with the "Table of Critical Values of D in the Kolmogorov-Smirnov Two-Sample Test." (70) The large sample table is used since all samples exceed 40 in the study. From the table it is possible to determine when the value of D is large enough to reject the null hypothesis at the level of significance desired.

Testing of the Hypotheses

In selecting the Kolmogorov-Smirnov statistic certain assumptions were made regarding the data. The observations are assumed to be independent. The assumption is also made that the measurements are at least ordinal and that there is an underlying continuous distribution.

Hypothesis I

There will be no significant difference in the interest patterns on each of the nine groups of the SVIB among students in the three major fields of study.

The cumulative distributions were made using the pattern analysis from low to high; reject, other, secondary and primary. The largest

deviation was determined in the frequency distribution and the probabilities associated with its occurrence compared with the tabled value. If the deviation between the two sample cumulative distribution is large enough, it is evidence to reject the null hypothesis and suggests that the two samples are, in fact, from different populations.

Table II presents the cumulative frequencies for the nine SVIB groups. The distributions are compared for the elementary and secondary education majors. The percentage is shown as a decimal with the largest absolute deviation starred (*) where significant. None of the differences between the elementary and secondary education majors for the nine groups are significant. Therefore, the null hypothesis of no significant difference is accepted.

In Table III the cumulative frequencies, for the nine SVIB groups, are presented for the elementary education and the business majors. The differences between these two majors, for the first four groups, show no significant differences. For group V, Social Service, the largest absolute difference of .316 is significant at the .025 level of significance. The null hypothesis of no significant difference is rejected. The Aesthetic-Cultural group indicates a difference of .490 which is significant at the .001 level of significance. The null hypothesis of no significant difference is rejected for the Aesthetic-Cultural group. The Business and Accounting, group VIII, has the largest absolute difference of .545 between the distributions which is significant at the .001 level. The null hypothesis of no significant difference for group VIII is rejected. There are no significant differences in Group IX, Business Contact or Sales, or in group X, Verbal-Linguistic, between elementary education and business majors;

TABLE II

CUMULATIVE FREQUENCIES AND PERCENTAGES ON PATTERN
ANALYSIS BETWEEN ELEMENTARY AND SECONDARY
EDUCATION MAJORS FOR EACH OF THE STRONG
VOCATIONAL INTEREST BLANK
OCCUPATIONAL GROUPS

SVIB Groups			Reject		Other		Secondary		Primary	
			Cf	%	Cf	%	Cf	%	Cf	%
I	Biological Science	Elem.	(8)	.17	(44)	.92	(47)	.98	(48)	1.00
		Sec.	(11)	.24	(35)	<u>.78</u>	(40)	.89	(45)	1.00
						.14				
II	Physical Science	Elem.	(29)	.60	(48)	1.00	(48)	1.00	(48)	1.00
		Sec.	(29)	.64	(43)	<u>.95</u>	(45)	1.00	(45)	1.00
						.05				
III	Technical Supervision	Elem.	(34)	.71	(45)	.94	(47)	.98	(48)	1.00
		Sec.	(26)	<u>.58</u>	(45)	1.00	(45)	1.00	(45)	1.00
						.13				
IV	Technical & Skilled Trades	Elem.	(30)	.62	(48)	1.00	(48)	1.00	(48)	1.00
		Sec.	(33)	<u>.73</u>	(44)	.98	(45)	1.00	(45)	1.00
						.11				
V	Social Service	Elem.	(0)	.00	(19)	.39	(27)	.57	(48)	1.00
		Sec.	(2)	<u>.04</u>	(19)	.42	(27)	.60	(45)	1.00
						.04				
VI	Aesthetic- Cultural	Elem.	(0)	.00	(6)	.13	(17)	.35	(48)	1.00
		Sec.	(0)	.00	(8)	<u>.18</u>	(15)	.33	(45)	1.00
						.05				
VIII	Business & Accounting	Elem.	(28)	.58	(40)	.83	(48)	1.00	(48)	1.00
		Sec.	(29)	.64	(41)	.88	(42)	<u>.93</u>	(45)	1.00
						.07				
IX	Business Contact-Sales	Elem.	(10)	.20	(34)	.70	(45)	.94	(48)	1.00
		Sec.	(14)	<u>.31</u>	(34)	.75	(42)	.93	(45)	1.00
						.11				
X	Verbal- Linguistic	Elem.	(6)	.12	(24)	.50	(37)	.77	(48)	1.00
		Sec.	(9)	<u>.20</u>	(21)	.46	(32)	.71	(45)	1.00
						.08				

* Significant at .05 level.
 ** Significant at .025 level.
 *** Significant at .01 level.
 **** Significant at .001 level.

Tables II, III and IV follow
 Kolmogorov-Smirnov statistic in
 reporting % as a decimal. The
 reader should ignore the decimal.

TABLE III

CUMULATIVE FREQUENCIES AND PERCENTAGES ON PATTERN
ANALYSIS BETWEEN ELEMENTARY EDUCATION AND
BUSINESS MAJORS FOR EACH OF THE STRONG
VOCATIONAL INTEREST BLANK
OCCUPATIONAL GROUPS

SVIB Groups			Reject		Other		Secondary		Primary	
			Cf	%	Cf	%	Cf	%	Cf	%
I	Biological Science	Elem.	(8)	.16	(44)	.92	(47)	.98	(48)	1.00
		Bus.	(19)	<u>.42</u>	(45)	1.00	(45)	1.00	(45)	1.00
				.25						
II	Physical Science	Elem.	(29)	.60	(48)	1.00	(48)	1.00	(48)	1.00
		Bus.	(26)	<u>.57</u>	(43)	.95	(45)	1.00	(45)	1.00
				.03						
III	Technical Supervision	Elem.	(34)	.70	(45)	.93	(47)	.98	(48)	1.00
		Bus.	(20)	<u>.44</u>	(41)	.91	(44)	.97	(45)	1.00
				.26						
IV	Technical & Skilled Trades	Elem.	(30)	.62	(48)	1.00	(48)	1.00	(48)	1.00
		Bus.	(16)	<u>.35</u>	(37)	.82	(42)	.93	(45)	1.00
				.27						
V	Social Service	Elem.	(0)	.00	(19)	.39	(27)	.57	(48)	1.00
		Bus.	(8)	.17	(32)	<u>.71</u>	(38)	.84	(45)	1.00
						** .32				
VI	Aesthetic- Cultural	Elem.	(0)	.00	(6)	.12	(17)	.35	(48)	1.00
		Bus.	(2)	.04	(22)	.49	(38)	<u>.84</u>	(45)	1.00
						**** .49				
VIII	Business & Accounting	Elem.	(28)	.58	(40)	.83	(48)	1.00	(48)	1.00
		Bus.	(4)	.09	(13)	<u>.28</u>	(24)	.55	(45)	1.00
						**** .54				
IX	Business Contact-Sales	Elem.	(10)	.21	(34)	.71	(45)	.94	(48)	1.00
		Bus.	(7)	.15	(24)	.55	(35)	<u>.78</u>	(45)	1.00
						.16				
X	Verbal- Linguistic	Elem.	(6)	.12	(24)	.50	(37)	.77	(48)	1.00
		Bus.	(7)	.15	(31)	<u>.69</u>	(41)	.91	(45)	1.00
						.19				

* Significant at .05 level.

** Significant at .025 level.

*** Significant at .01 level.

**** Significant at .001 level.

therefore the null hypothesis is accepted.

Table IV reports the frequency distributions for the secondary education and business majors. The largest absolute difference between these two majors is not significant for groups I, Biological Science, II Physical Science or III Technical Supervision. The null hypothesis of no significant difference for these groups is accepted. Group IV, Technical and Skilled Trades, has the largest absolute difference of .378 which is significant at the .01 level. Therefore, the null hypothesis of no significant difference between secondary education and business majors for group IV is rejected. Groups V, VI, and VIII, Social Service, Aesthetic-Cultural and Business and Accounting, have differences of .289, .511, and .623 respectively which represent significant differences of .05, .001 and .001. The null hypothesis of no significant difference is rejected for these three groups.

The results may be summarized for the first hypothesis as indicated in Table V.

Discussion

There were no significant differences in the distribution when elementary and secondary education majors were compared for the nine SVIB groups. Their interest patterns would appear to be very similar even though there are differences in the curricula for the two groups.

The differences that occur in the pattern analysis for the nine SVIB groups between elementary education and business majors are worthy of discussion. Elementary education majors have high patterns in groups V and VI, Social Service and Aesthetic-Cultural. The Social

TABLE IV
 CUMULATIVE FREQUENCIES AND PERCENTAGES ON PATTERN
 ANALYSIS BETWEEN SECONDARY EDUCATION AND
 BUSINESS MAJORS FOR EACH OF THE STRONG
 VOCATIONAL INTEREST BLANK
 OCCUPATIONAL GROUPS

SVIB Groups			Reject		Other		Secondary		Primary	
			Cf	%	Cf	%	Cf	%	Cf	%
I	Biological Science	Sec.	(11)	.24	(35)	.78	(40)	.88	(45)	1.00
		Bus.	(19)	.42	(45)	<u>1.00</u>	(45)	1.00	(45)	1.00
						.22				
II	Physical Science	Sec.	(29)	.64	(43)	.95	(45)	1.00	(45)	1.00
		Bus.	(26)	<u>.57</u>	(43)	.95	(45)	1.00	(45)	1.00
				.07						
III	Technical Supervision	Sec.	(26)	.57	(45)	1.00	(45)	1.00	(45)	1.00
		Bus.	(20)	<u>.44</u>	(41)	.91	(44)	.97	(45)	1.00
				.13						
IV	Technical & Skilled Trades	Sec.	(33)	.73	(44)	.97	(45)	1.00	(45)	1.00
		Bus.	(16)	<u>.35</u>	(37)	.82	(42)	.93	(45)	1.00
				***.38						
V	Social Service	Sec.	(2)	.04	(19)	.42	(27)	.60	(45)	1.00
		Bus.	(8)	.17	(32)	<u>.71</u>	(38)	.84	(45)	1.00
						*.29				
VI	Aesthetic- Cultural	Sec.	(0)	.00	(8)	.17	(15)	.33	(45)	1.00
		Bus.	(2)	.04	(22)	.48	(38)	<u>.84</u>	(45)	1.00
						****.51				
VIII	Business & Accounting	Sec.	(29)	.64	(41)	.91	(42)	.93	(45)	1.00
		Bus.	(4)	.08	(13)	<u>.29</u>	(24)	.55	(45)	1.00
						****.62				
IX	Business Contact-Sales	Sec.	(14)	.31	(34)	.75	(42)	.93	(45)	1.00
		Bus.	(7)	.15	(24)	<u>.55</u>	(35)	.77	(45)	1.00
						.20				
X	Verbal- Linguistic	Sec.	(9)	.19	(21)	.46	(32)	.71	(45)	1.00
		Bus.	(7)	.15	(31)	<u>.68</u>	(41)	.91	(45)	1.00
						.22				

* Significant at .05 level.
 ** Significant at .025 level.
 *** Significant at .01 level.
 **** Significant at .001 level.

TABLE V
 SUMMARY OF KOLMOGOROV-SMIRNOV ANALYSIS
 OF SIGNIFICANT DIFFERENCES BETWEEN
 ELEMENTARY EDUCATION, SECONDARY
 EDUCATION AND BUSINESS MAJORS
 ON STRONG VOCATIONAL INTEREST
 BLANK GROUP PATTERNS

SVIB Groups	Elementary- Secondary	Elementary- Business	Secondary- Business
Biological Science	NS	NS	NS
Physical Science	NS	NS	NS
Technical Supervision	NS	NS	NS
Technical and Skilled Trades	NS	NS	.01
Social Service	NS	.025	.05
Aesthetic-Cultural	NS	.001	.001
Business and Accounting	NS	.001	.001
Business Contact or Sales	NS	NS	NS
Verbal-Linguistic	NS	NS	NS

Service group is usually interpreted as an interest in people through a helping relationship. It might be expected that elementary education majors would score higher in this group. The Aesthetic-Cultural group for elementary education majors is significantly higher than the business majors. This group is usually interpreted as an interest in the areas of music, art and literature.

Business majors are significantly higher than elementary majors when the Business and Accounting group is considered. This group is usually interpreted as an interest in business detail kinds of work. It might be expected that this group would be the highest for business majors.

From the group analysis, using the Strong Vocational Interest Blank for men there is separation of these two majors which appears to avoid the "premarital occupations" found so frequently when the women's form is used.

The differences between secondary education and business majors are essentially the same as the differences between business and elementary majors. The results could be interpreted in the same way except for one additional group which was significantly different when business and secondary education majors are analyzed. Business majors tend to be higher than secondary majors on group IV, Technical and Skilled Trades. An interest in the operation of equipment would be congruent with the skill necessary for business majors to operate various types of business equipment.

Hypothesis II

There will be no significant difference in the scores of the 54

occupational scales among students in the three major fields of study on the SVIB.

The Kolmogorov-Smirnov technique was used for testing this hypothesis. The scores, for each of the 54 occupational scales, were compared for each of the majors with the other two majors. A total of 162 frequency distributions were prepared in order to analyze the three majors. The largest absolute difference was determined for each of the 162 distributions and compared with the tabled value for significance. The median, which according to Siegel (70), is the most appropriate measure of central tendency for scores in an ordinal scale, was calculated for each of the occupational scales. An interval of five was used throughout the analysis of the individual scales on the SVIB.

The results of the Kolmogorov-Smirnov technique, as applied to the 54 occupational scales, are reported in Table VI. In the first three columns the median is reported for each of the scales for secondary education, elementary education and business majors. The following column reports the direction of the difference if it is significant. The interval of maximum difference is reported in the next column if a significant difference was found. The last column reports the probability for the significant differences in the same order as reported in the previous two columns.

It can be seen from the first column that the secondary education majors have seven occupational scales (Musician Performer, Music Teacher, Librarian, Social Worker, Social Science Teacher, YMCA Secretary, Advertising Man and Author Journalist) with median scores of 40 or higher. Scores this high would give them a "B+" or "A" letter rating. In fact three of the seven scales (Musician Performer,

TABLE VI

KOLOMOGOROV-SMIRNOV ANALYSES; DIFFERENCES AND SIGNIFICANCE
OF SVIB OCCUPATIONAL SCALES AMONG SECONDARY EDUCATION,
ELEMENTARY EDUCATION AND BUSINESS MAJORS

Occupational Scales	Median			Dir. of Diff.	Interval of Max. Diff.	Probability
	Sec.	Elem.	Bus.			
DENTIST	24.5	26.7	25			
OSTEOPATH	28.5	28.5	23.8			
VETERINARIAN	19	20.8	26	B>S	20-24	.05
PHYSICIAN	31	27.6	17.5	S>B;E>B	20-24;15-19	.001; .001
PSYCHIATRIST	34	30.9	17.5	S>B;E>B	25-29;20-24	.001; .001
PSYCHOLOGIST	31	27.2	16	S>B;E>B	20-24;15-19	.001; .01
BIOLOGIST	25.7	24.1	17.5	S>B;E>B	20-24;15-19	.01; .01
ARCHITECT	25.3	24	16.5			
MATHEMATICIAN	20.5	21.1	19.7			
PHYSICIST	12.6	13.1	19.7			
CHEMIST	16.5	16.1	15.9			
ENGINEER	10.7	14	19.2	B>S;B>E	5-9;15-19	.05; .05
PRODUCTION MANAGER	15.4	18	29.2	B>S;B>E	15-19;15-19	.001; .001
ARMY OFFICER	15.3	10.3	17			
AIR FORCE OFFICER	20	17.1	19			
CARPENTER	10	11.3	18	B>S;B>E	5-9;25-29	.05; .05
FOREST SERVICE MAN	9.2	7.0	15	B>E	5-9	.05
FARMER	20.5	22.5	30	B>S;B>E	20-24;25-20	.05; .05
MATH SCIENCE TEACHER	22.6	25	29			
PRINTER	24	24	34	B>S;B>E	30-34;25-29	.01; .01
POLICEMAN	13	17	22.3	B>S;B>E	10-14;5-9	.001; .025
PERSONNEL DIRECTOR	26	23.6	24			
PUBLIC ADMINISTRATOR	33.5	30.3	30.5			
REHABILITATION COUNS.	39	38	33.1	S>B	30-34	.05
YMCA SECRETARY	40.1	40.6	31.5	S>B;E>B	40-44;30-34	.05; .025
SOCIAL WORKER	42	38.3	29	S>B;E>B	30-34;30-34	.001; .01
SOC. SCIENCE TEACHER	42.5	33	41.5			
SCHOOL SUPERINTENDENT	30.5	35.1	27.6			
MINISTER	37	38.7	23	S>B;E>B	25-29;25-29	.001; .001
LIBRARIAN	46.6	45.5	37	S>B;E>B	40-44;35-39	.01; .01
ARTIST	31	29.1	25.6			
MUSICIAN PERFORMER	47.5	46.1	36.5	S>B;E>B	40-44;40-44	.001; .001
MUSIC TEACHER	47	47.5	39	S>B;E>B	35-39;40-44	.01; .01
C.P.A. OWNER	25	27	31.7	B>S	20-24	.01
SENIOR C.P.A.	14	14	34.2	B>S;B>E	25-29;25-29	.001; .001
ACCOUNTANT	16	22.5	40.2	B>S;B>E	25-29;25-29	.001; .001
OFFICE WORKER	27	30	47.2	B>S;B>E	30-34;30-34	.001; .001
PURCHASING AGENT	18.5	25	35.8	B>S;B>E	20-24;30-34	.001; .001
BANKER	20.5	27.6	37.5	B>S;B>E	25-29;30-34	.001; .001
PHARMACIST	24	30.3	33.5	B>S;E>S	20-24;25-29	.001; .01
MORTICIAN	33.5	38	42.3	B>S	30-34	.001
SALES MANAGER	23.5	26	30	B>S	20-24	.05
REAL ESTATE SALESMAN	34	36.3	39			

TABLE VI (CONTINUED)

Occupational Scales	Median			Dir. of Diff.	Interval of Max. Diff.	Probability
	Sec.	Elem.	Bus.			
LIFE INS. SALESMAN	37	36	37.6			
ADVERTISING MAN	40	38.8	33.8	S>B	35-39	.05
LAWYER	35.7	35.1	30.2	E>B	30-34	.025
AUTHOR JOURNALIST	40	37.6	31.6	S>B	35-39	.001
PRESIDENT MFG.	14	18.7	24	E>S	15-19	.01
<u>SUPP. OCCUPATIONAL SCALES</u>						
CREDIT MANAGER	32	32.3	37.7			
CHAMBER OF COM. EXEC.	39	38	36.2			
PHYSICAL THERAPIST	33.2	34	31.5			
COMPUTER PROGRAMMER	21	19	24.7			
BUSINESS ED. TEACHER	37.1	37	45	E>S	30-34	.025
COMMUNITY REC. ADMIN.	37.5	35.3	30.5	S>B; E>B	35-39; 40-44	.001; .025

Music Teacher, and Librarian) have median scores of 45 or above which would correspond to an "A" letter rating. The SVIB scales for the three majors have been illustrated in Figures 1, 2 and 3.

The elementary education majors have four scales (Music Teacher, Musician Performer, Librarian, and YMCA Secretary) with a median of 40 or above corresponding to a "B+" or above rating. Three of the four (Music Teacher, Musician Performer, and Librarian) are, in fact, 45 or higher which would represent an "A" letter rating. All four of the high scores correspond to a secondary education major high score.

The business majors have five scales (Office Worker, Business Education Teacher, Mortician, Social Science Teacher, and Accountant) with medians of 40 or higher. Two (Office Worker and Business Education Teacher) of the five are 45 or above which would be an "A" rating. Only one of the five scales corresponds to a similar score with the education majors, that being Social Science Teacher which is 42.5 for secondary education majors and 41.5 for business majors.

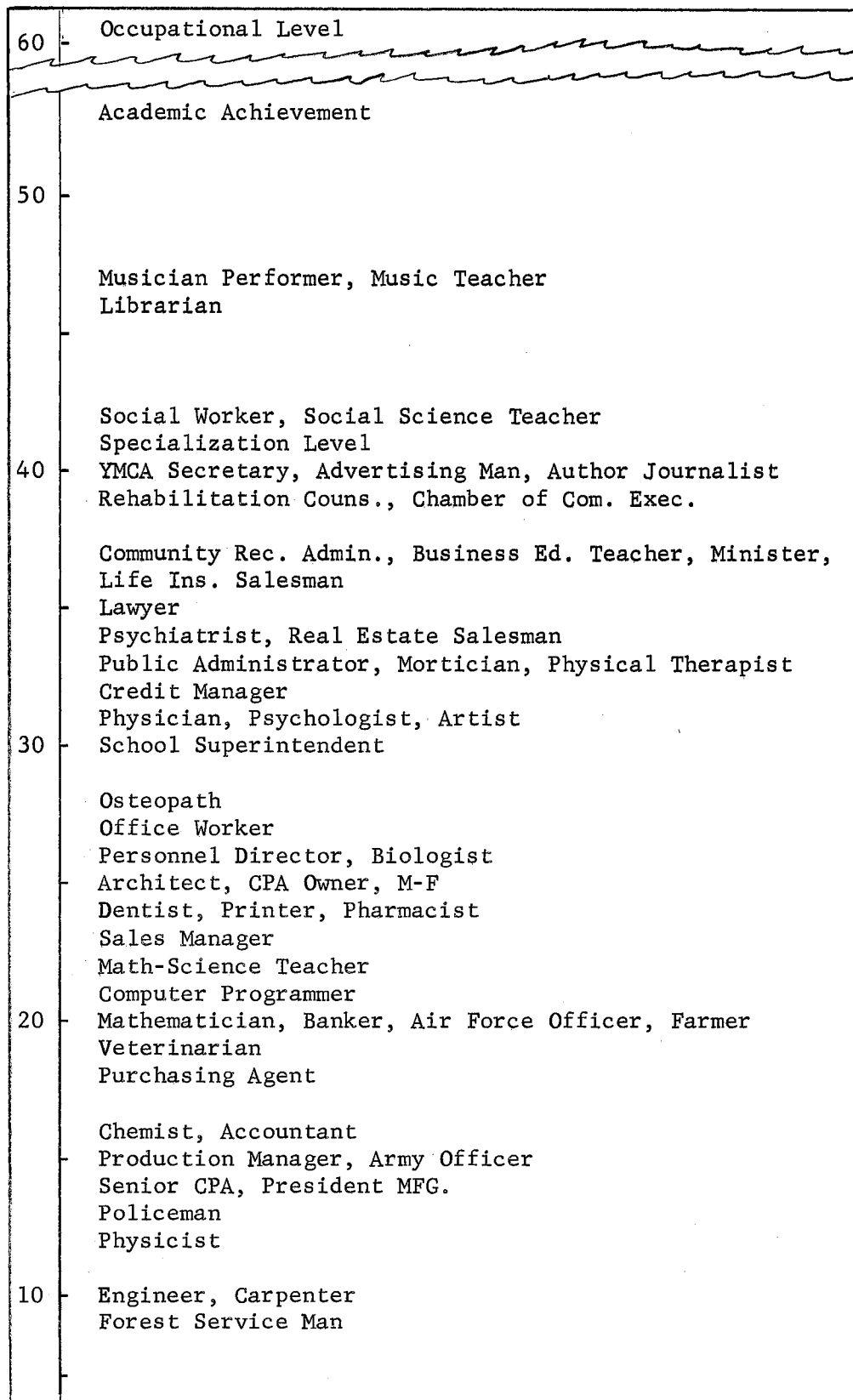


Figure 1. Median SVIB scores for secondary education majors.

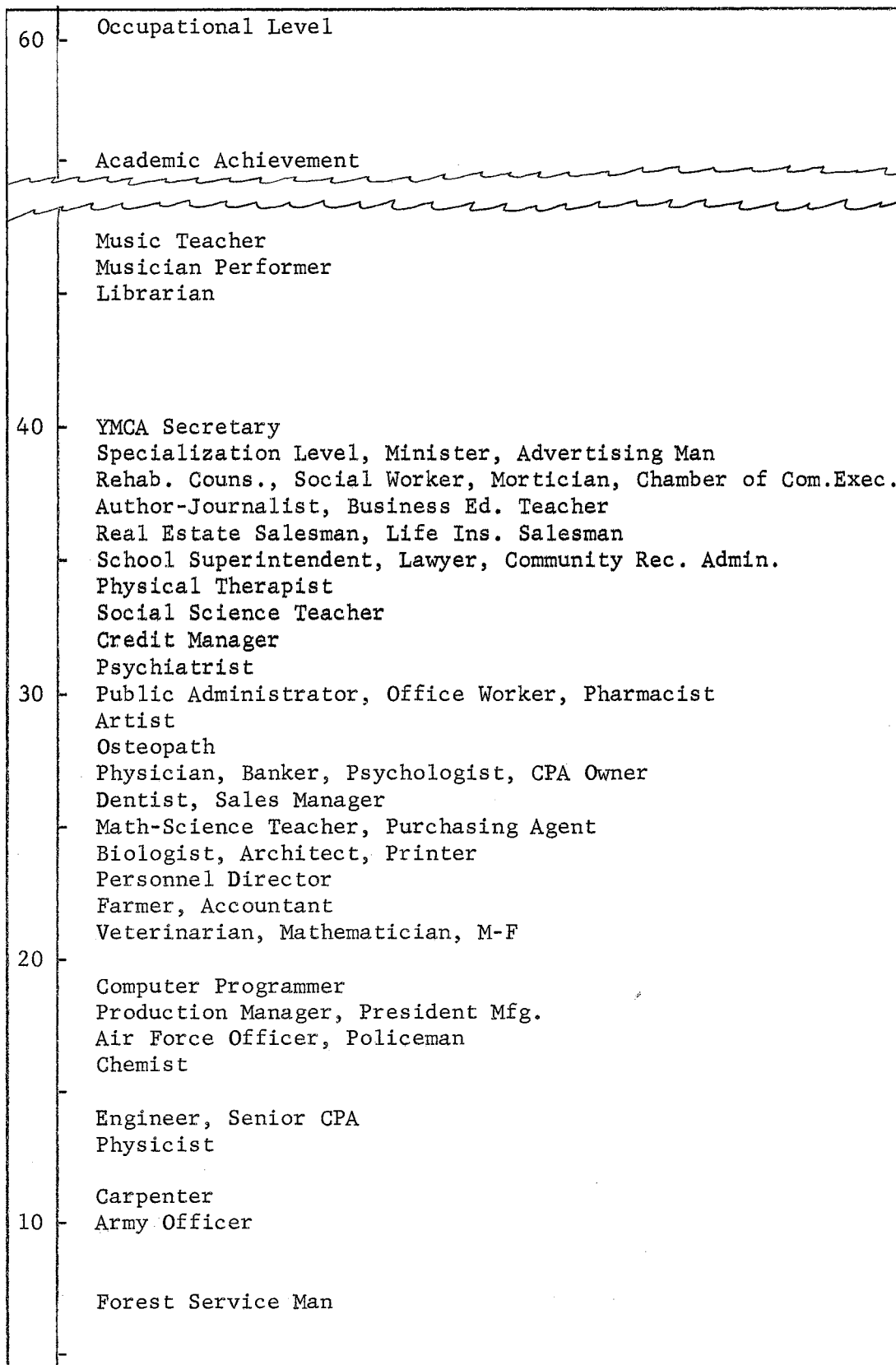


Figure 2. Median SVIB scores for elementary education majors.

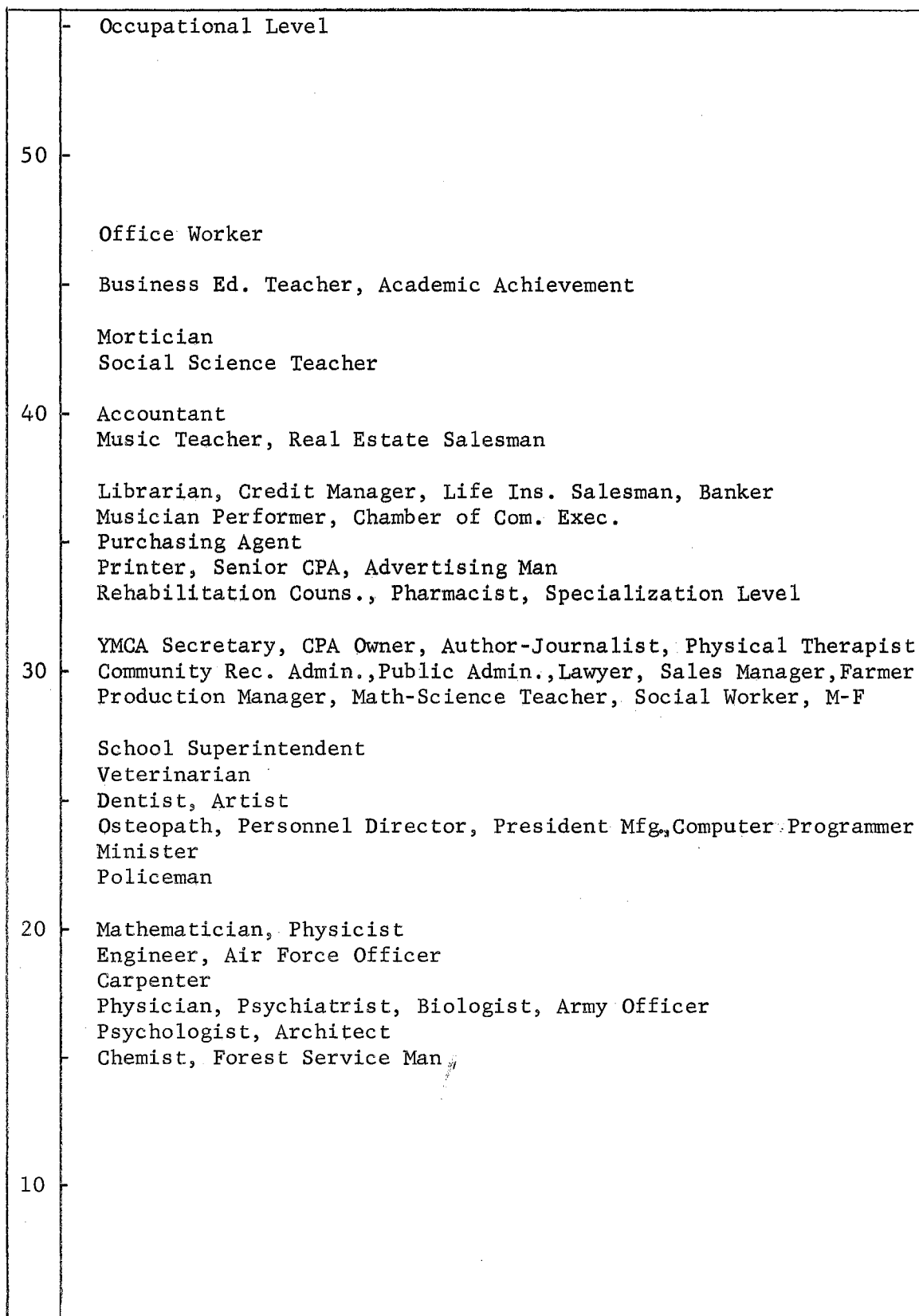


Figure 3. Median SVIB scores for business majors.

In the comparison of elementary and secondary education majors only one scale, Pharmacist, has a distribution significantly different. The null hypothesis can be rejected for the Pharmacist scale at the .01 level of significance. For the other fifty-three occupational scales the null hypothesis, of no significant difference, is accepted.

The comparison of secondary education and business majors yields 32 scales with significant difference in distributions as indicated in Table VI. Eight of the 30 scales have distributions significantly different at the .05 level, one distribution is significantly different at the .025 level, six distributions are significantly different at the .01 level and the remaining 17 distributions are significantly different at the .001 level.

Elementary education and business majors yield 24 scales with distributions significantly different. Four of the scales have distributions significantly different at the .05 level, four distributions are significantly different at the .025 level, six distributions are significantly different at the .01 level and the remaining ten distributions are significantly different at the .001 level.

The results are generally congruent with the analysis of the group patterns. By using the individual occupational scales the significant differences of distributions among the three majors are more evident. In both the group and individual scale analyses the secondary and elementary education majors do not show significant differences. However, the business majors are significantly different from both the secondary and elementary education majors.

Some of the significant differences which show up on the individual scales, but not on the group patterns, may be explained by the

difference in intervals. The intervals on the individual occupational scales are not as broad as in the pattern analysis and therefore some of the differences may be obscured in the pattern analysis. Siegel (70) indicates that it is best to use as many intervals as are feasible to avoid obscuring the maximum deviation through the use of too few intervals. The Biological Science group, for example, contains four scales which are significant on the individual occupational scales, but are not significant in the group analysis. This may be explained by noting that the interval of maximum difference on the four occupational scales is the dividing line of the reject pattern for the group analysis.

Hypothesis III

There will be no significant difference in the four non-occupational scales among students in the three major fields of study on the SVIB.

The Kolmogorov-Smirnov technique was used for testing the data in this hypothesis, using intervals of five for the frequency distributions. The largest absolute difference was determined and compared with the tabled value to obtain the level of significance.

Table VII shows the results of the analysis. There were no significant differences in the distributions between elementary and secondary education majors on the four scales. Therefore, the null hypothesis is accepted in the comparison of these two majors.

The results, as indicated in Table VII, show a significant difference on the Specialization Level between secondary education and business majors at the .05 level. The null hypothesis is rejected for the

Specialization Level scale. For the other three scales the null hypothesis is accepted.

TABLE VII

KOLMOGOROV-SMIRNOV ANALYSES: DIFFERENCES AND SIGNIFICANCE
OF SVIB NON-OCCUPATIONAL SCALES AMONG SECONDARY EDUCATION
ELEMENTARY EDUCATION AND BUSINESS MAJORS

	Median			Direction of Difference	Interval of Maximum Difference	Proba- bility
	Sec.	Elem.	Bus.			
SPECIALIZATION LEVEL	41.6	39	33.5	S > B	50-54	.05
OCCUPATIONAL LEVEL	60.1	60.5	55.5			
MASCULINITY FEMININITY	25.2	21.1	29	E > B	43-48	.01
ACADEMIC ACHIEVEMENT	53.5	55.4	45.3			

The comparison between elementary education and business majors shows a significant difference on the Academic Achievement scale at the .01 level. The null hypothesis is accepted for the other three scales for elementary education and business majors.

Discussion

It is not surprising that secondary education majors were significantly different from business majors when this scale was analyzed. According to the SVIB manual this scale is usually interpreted as a desire to become specialized in an occupational field through advanced study. The high average scores on this scale were earned by psychologists, psychiatrists, librarians, biologists and social workers. All of these individual scales were significantly different when distributions were compared between secondary education and business majors. On all of these scales the secondary education major had a higher

median than the business major. The occupational criterion groups which had the lowest average scores on the Specialization Level Scale were veterinarians, farmers, carpenters, morticians, and real estate salesmen. The business majors' median on these five scales was higher than the secondary education majors which would indicate interests similar to these occupational criterion groups.

The Academic Achievement Scale is a newly developed scale to predict good scholarship. The eight occupational criterion groups with the highest average score on this scale are biologist, mathematician, psychiatrist, physicist, psychologist, librarian, chemist and physician. These are all scales in which elementary education majors had higher median scores than the business majors. The eight criterion groups with the lowest average score on the Academic Achievement Scale were real estate salesman, carpenter, mortician, purchasing agent, printer, sales manager, banker, and farmer. Business majors had higher median scores on all of these eight scales, so it is to be expected that there is a significant difference on this scale.

Hypothesis IV

There will be no significant difference in the 18 personality traits of the CPI among the students in the three major fields.

The Kolmogorov-Smirnov technique was used in the analysis of data to test this hypothesis. The intervals used in the distribution of scores varied from one scale to another depending on the range of scores. An interval of one was used with the Communality (Cm) scale. An interval of two was used with the following scales: Capacity for Status (Cs), Responsibility (Re), Good Impression (Gi), Achievement via

Independence (Ai), Achievement via Conformance (Ac), Intellectual Efficiency (Ie), Psychological-Mindedness (Py), Flexibility (Fx), and Femininity (Fe). An interval of three was used with the following scales: Dominance (Do), Sociability (Sy), Social Presence (Sp), Self-Acceptance (Sa), Sense of Well-being (Wb), Socialization (So), Self-Control (Sc) and Tolerance (To).

A total of 54 frequency distributions were prepared to make the analysis between each pair of the three major groups. The largest deviation occurring in the distribution was determined and the difference was tested for significance by comparison with the tabled value. Table VIII reports the results of the analysis, showing the median, direction of difference, interval of maximum difference and the probability. The secondary and elementary education majors were compared on each of the 18 scales of the CPI. The Capacity for Status (Cs) and the Flexibility (Fx) scales are the only two scales which indicate significant differences in the distributions. The null hypothesis is rejected at the .05 level of significance for these two scales. The other 16 scales do not indicate a significant difference in the distributions and the null hypothesis is accepted. The profile for the three majors is illustrated in Figure 4.

When secondary education and business majors are compared, the results show that there are six scales with a significant difference in the distributions. The null hypothesis can be rejected at the .001 level of significance on the Capacity for Status (Cs) and the Social Presence (Sp) scales. The null hypothesis can be rejected at the .01 level of significance on the Psychological-mindedness (Py) and the Flexibility (Fx) scales. The null hypothesis can be rejected at the

TABLE VIII

CALIFORNIA PSYCHOLOGICAL INVENTORY SCALES
SHOWING SIGNIFICANT DIFFERENCE BETWEEN
ELEMENTARY EDUCATION, SECONDARY
EDUCATION AND BUSINESS MAJORS

Scale	Median			Direction of Difference	Interval of Maximum Difference	Probability
	Sec.	Elem.	Bus.			
Do	30.8	30.4	25.9			
Gs	22.7	20.4	19	Sec. > El.; Sec. > Bus.	(19-20) (19-20)	.05 .001
Sy	27.5	27.1	24.9			
Sp	39.7	37.3	34.1	Sec. > Bus.; El. > Bus.	(35-37) (32-34)	.001 .05
Sa	24.2	23.6	22			
Wb	37.2	36.5	38.2			
Re	32	33	32.1			
So	37.7	42	40.9			
Sc	27.3	29.5	30			
To	25.9	23.9	23.8	Sec. > Bus.	(24-26)	.05
Gl	16.1	17.5	15.6			
Cm	26.1	26.9	26.7			
Ac	28.8	30.1	28.4			
Ai	22.9	22.1	21.1	Sec. > Bus.	(21-22)	.05
Ie	41.4	41.1	39			
Py	12.7	11.6	10.9	Sec. > Bus.	(11-12)	.01
Fx	12.3	9.5	9.3	Sec. > El.; Sec. > Bus.	(10-11) (8-9)	.05 .01
Fe	22.9	23.6	23.9			

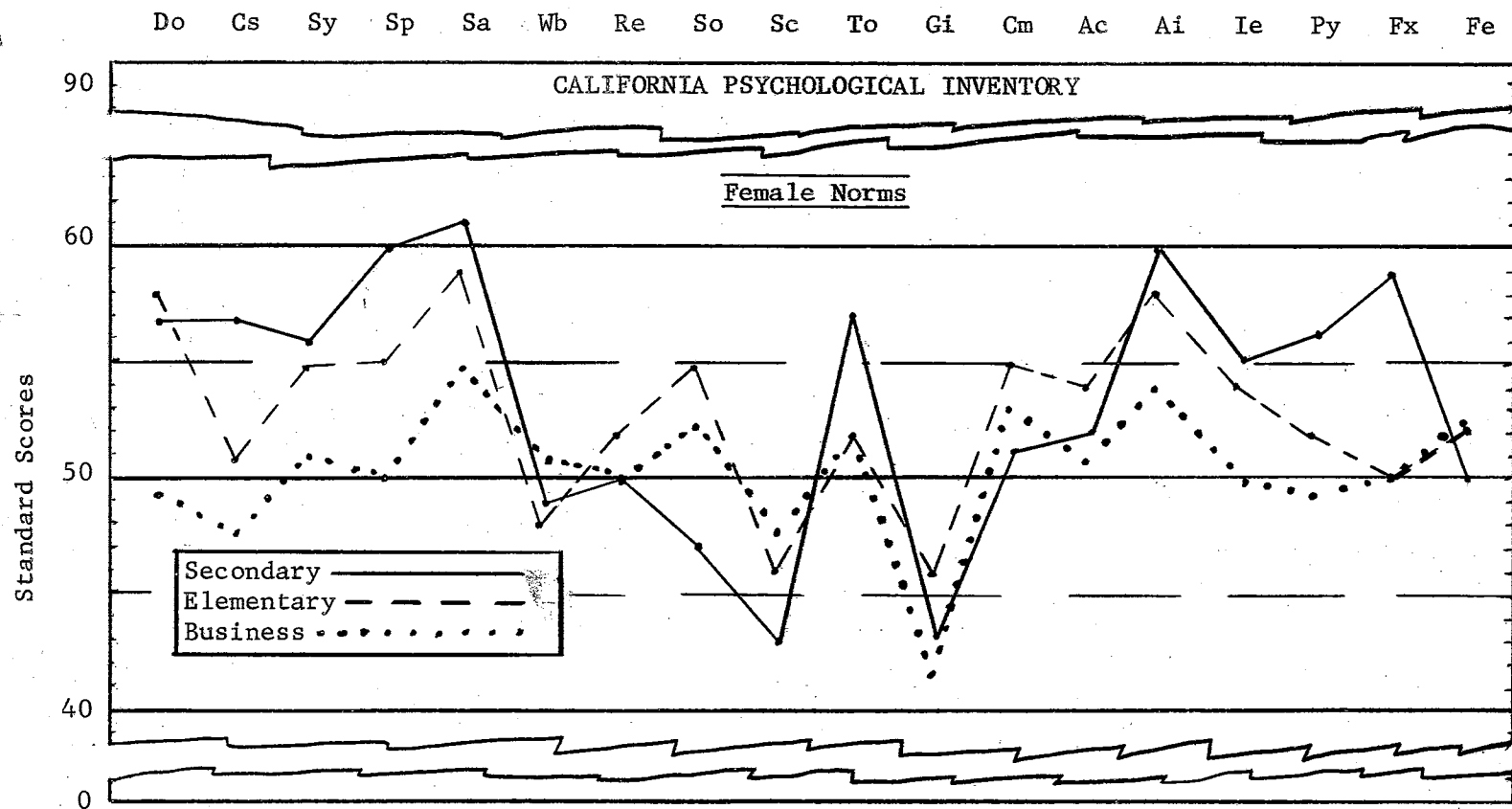


Figure 4. Profile of median scores for secondary education, elementary education and business majors on the California Psychological Inventory.

.05 level of significance on the Tolerance (To) and the Achievement via Independence (Ai) scales. The other twelve scales do not indicate significant differences in the distributions great enough to reject the null hypothesis.

The elementary education and business majors were compared on the 18 scales of the CPI. There was a significant difference in the distributions on the Social Presence (Sp) scale great enough to reject the null hypothesis at the .05 level. However, on the other 17 scales the differences in the distributions were not sufficient to reject the null hypothesis.

Discussion

Both elementary and secondary education majors were significantly different when the Social Presence (Sp) scale was analyzed. The two education major groups had higher median scores on this scale than did the business majors. This would indicate that the education majors tend to be more poised, spontaneous and more self-confident in personal and social interaction.

Secondary education majors were significantly different from business majors on Tolerance (To), Achievement via Independence (Ai) and Psychological-Mindedness (Py). The secondary education majors had a higher median score on all three of these scales. This would be interpreted to mean that secondary education majors are more permissive, accepting and non-judgmental in their social beliefs and attitudes. They possess "factors of interest and motivation which facilitates achievement in any setting where autonomy and independence are positive behavior." (34:13) The secondary education major would

be described as more "interested in and responsive to the inner needs, motives and experiences of others." (34:13)

The secondary education majors were significantly different from both elementary education and business majors when the Flexibility (Fx) and Capacity for Status (Cs) scales were analyzed. This would be interpreted to mean that secondary education majors are more flexible and adaptable in their thinking and social behavior, and they have more of the personal qualities and attributes which underlie and lead to status.

The results of the CPI indicate that all three major groups have a majority of their median scores at or above the standard score of fifty. This would be interpreted that they are functioning effectively both intellectually and socially. The scores on Self-Control (Sc) would indicate that all three groups may be somewhat impulsive, aggressive and assertive and emphasize personal pleasure and self gain. The Good Impression (Gi) scale, which is used to identify faking, indicates that all three groups are somewhat cautious and inhibited but would not be interpreted as faking scores. The scores on the Self-Acceptance (Sa) scale would indicate that all three major groups are above average in acceptance of themselves and their own personal worth. They could be described as possessing more self-confidence and self-assurance than the average female college student.

The CPI has two scales, Capacity for Status (Cs) and Flexibility (Fx), which provides some evidence for the use of personality measures to differentiate secondary and elementary education majors.

CHAPTER V

SUMMARY, LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

It is the intent of this chapter to first, summarize the investigation; second, discuss some limitations of the study; third, make conclusions based upon the statistical analysis; and fourth, to suggest recommendations for further study.

Summary

Recent publications have shown the interest of counselors and student personnel workers in gaining a better understanding of vocational development. It has only been within the past twenty years that theoretical models have been presented by various writers to help explain vocational choice. The theoretical formulations have stimulated an interest in research resulting in many studies of occupational choice. Many factors have been studied to help explain vocational development. Only recently have personality factors become an important part of the research efforts to understand vocational choice.

The counselor and student personnel worker have the difficult task of helping students make a choice of a major leading to a rather specific occupation. This challenge has been faced by many counselors as a task of helping the student come to a better understanding of "self." The total "self" must be explored in such a way that the counselee understands his capacities, interests, and other personal and cultural

forces which interact to make him what he is at that particular moment. The complexity of factors affecting choice makes the task difficult if the individual has been unrealistic in his self appraisal.

The student must have sufficient understanding of various occupations to evaluate their appropriateness for himself. Many students change their majors when they come to the realization that their abilities are not congruent with the requirements of the specified training programs. Attitudes and feelings toward various occupations must be a part of the exploration before arriving at a point of choice. The point of choice, as used, does not mean to infer a terminal point since evaluation and possible changes are likely to occur even after such a choice is made.

Tests, such as those used in the present study, may be used as a part of the appraisal and as tools in understanding himself. Interest blanks and inventories have proven to be valuable aids in exploring areas and rather specific occupations. Personality tests, however, have been somewhat contradictory and incomplete in the appraisal efforts.

Personality tests are generally accepted as being valuable when used to help the individual explore attitudes and feelings about himself. In the area of vocational choice, most counselors recognize that a relationship between personality and occupations is evident. Perhaps the definition and measurement of personality concepts are the biggest obstacles to a high correlation with occupational choice. It must also be recognized that there is considerable latitude within occupations to accommodate individuals with differing personalities.

The present study was based on the theoretical formulation that

people have personality characteristics similar to others already in an occupation and choose the occupation that will allow them to implement their self concept. If this is true then those within a major should show personality characteristics more similar to others in the same major than majors in another field. Elementary education majors might be expected to have personality characteristics different from secondary education majors. Business majors might be expected to have characteristics different from either elementary or secondary education majors.

Two tests were used in this study to determine if there were significant differences in the distribution of scores among the three majors selected. The Strong Vocational Interest Blank for men was used as a measure of interests on individual scales and group patterns. The California Psychological Inventory was selected as a measure of personality characteristics. Personality was defined by eighteen factors measured by the inventory.

Grade point averages of the samples were compared as a method of control for ability. Grade point averages were compared using the analysis of variance with no significant difference being found among the three samples.

The hypotheses of the study were analyzed using the Kolmogorov-Smirnov two-sample test. This statistic "is a test of whether two independent samples have been drawn from the same population." (70:127) If the difference in the observed data was equal to or larger than the tabled value, the null hypothesis was rejected using the five per cent level of significance.

Limitations

Certain limitations must be recognized for the conclusions, drawn from the data, to have value.

Generalization that would relate the findings of this study to other college populations can be undertaken only with caution. The tests used in this study, although selected because they appeared to be the best available, may have deficiencies which could affect the conclusions.

The samples may be questioned as not representative beyond the immediate college population.

The present study would be considered ex post facto research and would, therefore, have the limitations of such studies. The factors of control, self-selection and interpretation are the main weaknesses of ex post facto research.

Conclusions

The findings of this study accepted or rejected the hypotheses under consideration as follows:

1. The SVIB, analyzed for group patterns, produced some significant differences between the business majors and elementary education majors and between the business majors and secondary education majors. The significant differences were in groups V, VI and VIII when elementary education majors were compared with the business majors. Groups IV, V, VI and VIII were significantly different when the secondary education and business majors were compared. However, there were no significant differences between the elementary and secondary

education majors in any of the nine groups. It appears that on a group analysis education majors, as a field, may have significantly different patterns from business majors, but that differences are not evident when education majors are separated into an elementary and secondary dichotomy.

2. When secondary education and business majors were compared, thirty-two of the fifty-four occupational scales showed significant differences. Twenty-four of the occupational scales were significantly different when the elementary education and business majors were compared. There was only one significant difference when the elementary and secondary education majors were compared, the Pharmacist scale. With the individual occupational scales there were some statistically significant differences between education majors and business majors, but the differences between elementary and secondary education majors are almost nonexistent.
3. The nonoccupational scales produced significant differences as follows: a statistically significant difference was found between business and secondary education majors on the Specialization Level scale. This scale is usually interpreted as a desire in narrowing one's interests to a specialized field through advanced study. The results appear consistent with the emphasis placed on a major teaching field in secondary education. Although the difference is not significant, the tendency is for secondary education majors to score higher than elementary education majors. This could be interpreted as "in the expected direction" since the secondary education

major is more specialized in a particular subject matter field, whereas the elementary education major's curriculum is more generalized.

There was no significant difference on the Occupational Level scale. This has been interpreted variously as a measure of drive, level of aspiration and socioeconomic level of interests.

The Academic Achievement scale was recently developed to identify interest patterns associated with scholarship. There is a significant difference between elementary education and business majors, with elementary education majors scoring higher. The secondary education major is higher than the business major, but is not significantly different from the elementary education major or business major.

4. In the analysis of the G. P. I. there are six scales which show significant differences. One of the scales that produced significant differences was the Flexibility Scale. Secondary education majors tend to be higher than elementary education majors and could be described as more flexible and adaptable in their thinking and social behavior. The secondary education major is significantly different from the business major on this scale and the difference would tend to be even more intense. There is no significant difference occurring on this scale between business and elementary education majors.

The other scale which shows a significant difference between the elementary and secondary education majors is the Capacity for Status. Secondary education majors were

significantly different from both elementary education and business majors. The median for secondary education majors was higher than the elementary education and business majors. Although the elementary education major had a higher median than the business major the difference was not significant. This scale would indicate that secondary education majors have personal qualities and attributes which lead to status which are more evident than in elementary education or business majors.

The Social Presence Scale indicates a significant difference between business and elementary education and a highly significant difference between secondary education and business. The secondary education majors would be described as more poised, spontaneous and self-confident than business majors, as would the elementary education majors. However, the difference between the secondary and elementary education majors is not significant on this scale.

Three of the scales are significantly different between secondary education and business majors. The Tolerance Scale tends to indicate that secondary education majors are more permissive and non-judgmental in their social beliefs and attitudes than either business majors or elementary education majors. The difference, however, is not significant between the two education majors.

Secondary education majors tend to score higher than business majors on the Achievement via Independence Scale. There is a significant difference between secondary education

majors and business majors, but the other differences on this scale are not significant. This scale is interpreted as meaning that the secondary education majors tend to have interests and motivation, which facilitate achievement in any setting where autonomy and independence are positive behaviors.

On the Psychological-Mindedness Scale the secondary education major is significantly different from the business major. Although the median of the secondary major is slightly higher than the elementary major, the difference is not significant. This scale would indicate that the secondary major is more likely to be interested in, and responsive to, the inner needs and motives of others. They would be seen as more observant, perceptive, verbally fluent and more rebellious toward authority.

Recommendations

As the study progressed, the writer became cognizant of several areas in which certain refinements in the methods and techniques would improve the research.

1. The size of the samples made the writer somewhat apprehensive of the results. Larger samples would make the results more meaningful.
2. It was felt that by including representatives from various secondary teaching fields differences may have been neutralized. If a large enough sample of a specific field such as mathematics, social studies or physical science could be

tested and compared with elementary education majors, the differences might be more evident.

3. The writer feels satisfied that personality tests may be used to discriminate between students majoring in various fields. Although the results of the present study were not conclusive, some significant differences were discovered and some trends were noted. Other tests may be found which prove to be more useful in this type of study.
4. The Strong Vocational Interest Blank for men appears to discriminate between business and education majors. The use of specific secondary majors, it is felt, would produce more discriminating results. Further studies of women's majors and occupations are needed. The paucity of research, as evident in the review of literature, is testimony to the need for such studies.
5. The writer was generally satisfied with the results of this study. He recommends a similar study with larger samplings used and with the possible inclusion of other majors.

The findings of this study lend some support to the theoretical models which conceptualize personality as a factor in the choice of a major. Although differences were identified which were significant and may eventually prove to be worthwhile in prediction of majors, it would be essential that cross validation studies be conducted before being used in this way.

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APPENDIX

OKLAHOMA STATE UNIVERSITY · STILLWATER
University Counseling Services
FRontier 2-6211, Exts. 612, 613

74075

Dear Student,

As an advanced student, you are in a position to be of assistance to the Counseling Service and the College of Business. The Counseling Service and the Advisors in your college work with many students who are trying to make a firm decision about a major field of study. You are in the final phase of your program and we believe, with your co-operation, we can learn something about Business majors which may be of value to the advisement and counseling programs.

We would like to encourage you to take part in a study which will require about an hour and a half of your time. In addition to helping with the study, we believe that the information will be valuable to you. Two instruments, The Strong Vocational Interest Blank and the California Psychological Inventory, will be used in the study and arrangements may be made to discuss the results with you. Arrangements for administering the instruments can be flexible to fit into your time schedule.

Your assistance is needed in this study. Would you please indicate your willingness to take part in this study by listing the time when you could take the two instruments on the enclosed form and return through the campus mail.

Thank you and best wishes in your future career.

Sincerely,

/s/ Dale Helmick

Dale Helmick, Counselor
University Counseling Service

/s/ Edw. C. Burris

Edward C. Burris, Vice Dean
College of Business

OKLAHOMA STATE UNIVERSITY • STILLWATER
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74075

Dear Student,

As a senior, you are in a position to be of assistance to the Counseling Service and the College of Education. The Counseling Service and the Advisors in your college work with many students who are trying to make a firm decision about a major field of study. You are in the final year of your program and we believe, with your cooperation, we can learn something about Education majors which may be of value to the advisement and counseling programs.

We would like to encourage you to take part in a study which will require about an hour and forty-five minutes of your time. In addition to helping with the study, we believe that the information will be valuable to you. The instruments, The Strong Vocational Interest Blank and the California Psychological Inventory, will be used in the study and arrangements may be made to discuss the results with you. Arrangements for administering the instruments can be flexible to fit into your time schedule.

Your assistance is needed in this study. Would you please indicate your willingness to take part in this study by listing the time when you could take the two instruments on the enclosed form and return through the campus mail.

Thank you and best wishes in your future career.

Sincerely,

/s/ K. Dale Helmick

K. Dale Helmick, Counselor

/s/ W. P. Ewens

W. P. Ewens, Director
Student Personnel
College of Education

VITA

Kenneth Dale Helmick

Candidate for the Degree of

Doctor of Education

Thesis: A COMPARATIVE STUDY OF PERSONALITY CHARACTERISTICS OF
ELEMENTARY AND SECONDARY EDUCATION MAJORS: USING THE
CALIFORNIA PSYCHOLOGICAL INVENTORY AND THE STRONG
VOCATIONAL INTEREST BLANK

Major Field: Student Personnel and Guidance

Biographical:

Personal Data: Born in Salina, Kansas, September 29, 1924, the son of Neal Helmick and Demaris Myles Helmick. He married the former Aileen I. Barnett in 1952. His family includes four children: Ronald, 14 years of age; Neal, 12 years of age; Bernard, 9 years of age; and Linda, 6 years of age.

Education: Attended Phillips grade school in Salina, Kansas; graduated from Salina High School, Salina, Kansas, in May, 1942; received the Bachelor of Arts degree from Kansas Wesleyan University, Salina, Kansas, with a major in psychology, in June, 1950; received the Master of Science degree from Kansas State University, Manhattan, Kansas, with a major in counseling and guidance, August, 1955; completed the requirements for the Doctor of Education degree in student personnel at Oklahoma State University, Stillwater, Oklahoma, May, 1968.

Professional Experience: Entered the United States Army in 1943, serving with the 104th Infantry Division in the European Theater; served as a classroom teacher in Kansas and New Mexico; director of guidance in Russell, Kansas, 1950-1960; director of guidance and testing in Oklahoma City, Oklahoma, 1960-1965; education instructor and counselor at Oklahoma State University, Stillwater, Oklahoma, 1965-1967; Assistant Professor of Education and Counselor, Central Missouri State College, Warrensburg, Missouri, 1967.

Professional Organizations: American Personnel and Guidance Association, National Vocational Guidance Association, American College Personnel Association, National Council on Measurement in Education, Missouri Guidance Association, Phi Delta Kappa.