

A STUDY OF SELECTED NONINTELLECTUAL VARIABLES
AMONG GROUPS OF STUDENTS IN A
TECHNICAL INSTITUTE

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PREFACE

New legislation in the last decade has caused crash programs in many technical institutions. Confusion has, thus, surrounded the selection of students for these programs, so vocational counselors and administrators have had to rely upon intellectual factors to determine the expectancy of students to successfully complete these programs. Increased data relating to the influence of certain nonintellectual variables on career selection and subsequent success would indicate that vocational educators should investigate certain nonintellectual characteristics as they apply to technical students. The need for more information regarding these nonintellectual factors precipitated this study.

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CHAPTER I

INTRODUCTION

A current trend toward increased vocational education and career training programs is drawing students away from the traditional four-year baccalaureate degree programs and toward occupationally-oriented programs which will satisfactorily train them for an entry level position in their chosen field. Since these programs are in the process of evolution, they encounter many difficulties which must be solved while the program is in operation. One problem is that of selecting students for these programs. The common practice of vocational counselors and administrators is to rely on certain intellectual factors which are felt to be necessary in order for the technical student to successfully complete the program. A greater emphasis in educational philosophy toward meeting the needs of the students, however, has brought increased pressure upon the administrators and counselors to seriously consider what other characteristics are necessary in the technical student to be successfully trained. In view of the numerous other areas also requiring research by vocational education leaders, there is a vital need to identify these characteristics so that the initial step of finding the right students for the programs can be performed skillfully and accurately.

Statement of the Problem

One function of the administrative division of technical institutes involves the selection, classification, and guidance of students who enroll in their programs. Counselors and administrators, however, are attempting to accomplish this task without the aid of adequate and reliable measurements which characterize the successful technical institute student. Research completed to date has not clearly isolated those characteristics which differentiate between the dropouts and the successful students. The need for additional descriptive information in this area is the problem faced in this study.

Need for the Study

Many semi-professional jobs require skills which can be obtained in a two-year technical program. Demands from employers for graduates from these programs has increased the need for an additional number of programs being offered. Many of these programs are still in the developmental stages and are under financial pressure at the same time that enrollments are increasing. These factors all combine to make the jobs of administrators and vocational counselors increasingly difficult without reliable guidelines to follow in selecting prospective students. Even after proper screening methods have been devised in order to distinguish the potentially successful student from the dropout, there still remains the problem of identifying the program which will best meet his personal needs, interests, and talents. Administrators of technical programs repeatedly encounter difficulty in enrolling students whose characteristics match program offerings which are based on employment opportunities.

Obviously the successful operation of the technical program is dependent, to a large degree, upon the characteristics of the students who successfully complete the program. It should be possible to determine these characteristics through a comparison of dropouts with successful students.

Purpose of the Study

The purpose of this study was to determine if there are nonintellectual characteristics peculiar to successful technical students and if these characteristics can be used to increase the effectiveness of counselors and administrators in assisting students in the selection of a program most compatible with their needs, interests, and capabilities. The purpose was realized by examining the nonintellectual variables of interests, values, personality, and socioeconomic position. The specific questions posed in relation to this purpose were:

- (1) Are there any significant differences between (a) dropouts and persisting technical students, (b) entering freshmen and first-quarter second year students, (c) freshman persistors and freshman dropouts, or (d) freshman persistors and first-quarter second year students when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?
- (2) Are there any significant differences or characteristic profiles exhibited among (a) entering freshmen, first-quarter second year students, dropouts, and persistors or (b) persisting freshmen, freshman dropouts, persisting

second year students, and second year dropouts when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

- (3) Is there a significant difference or characteristic profile exhibited when the total group is compared with the norm group on 31 scales measuring the variables of interests, values, personality, and socioeconomic position?

Limitations of the Study

- (1) Subjects were randomly selected from all entering freshmen (fall quarter, 1971) and by using all first-quarter second year students listed as such for fall quarter, 1971, in the Dean's office at the State Technical Institute at Memphis, Tennessee.
- (2) Subjects were selected without regard to sex or technological major.
- (3) Although this study concerns characteristics of dropouts, it is not concerned with further problems of attrition such as why students dropped out or what they did after dropping out.
- (4) Since only 13.4% (28 out of 209) of the subjects used in this study were female, norms for the male groups were used.

Assumptions

The design of this study was based upon several assumptions:

- (1) It was assumed that the students entering technical education programs in the fall of 1971 would be similar to the technical education students in future years. The validity of this assumption was supported by the work of Astin (1965, p. 51) who cited several studies which show that the characteristics of students at an institution remain stable over a period of years.
- (2) It was assumed that students selected for study accurately responded to the instruments used in this study.
- (3) Based on the conclusions drawn by Horst (1941) that a limited number of fundamental measures could be used to conduct valid research, only one measure was selected for each variable.

Definition of Terms

Characteristic profile. A profile that distinguishes or identifies one group from another.

Dropout. In this study, a student who was no longer in the program two quarters following testing.

Interests. In this study, those items measured by the Kuder Preference Record.

Persisting, or successful, student. In this study, a student who was still in the program two quarters following testing.

Personality. In this study, those items measured by the Omnibus Personality Inventory.

Profile. An outline produced by test scores of the subscales plotted in relation to standard scores of the selected measured (Lindeman, 1970).

Socioeconomic position. In this study, those items measured by Hollingshead's Two Factor Index of Social Position.

Technical education. A planned sequence of classroom and laboratory experiences at the post-secondary level designed to prepare persons for a cluster of job opportunities in a specialized field of technology (U. S. Department of Health, Education, and Welfare, 1967, p. 573).

Values. In this study, those items measured by the Study of Values.

Organization of the Study

Chapter I contains an introduction, a statement of the problem, need for the study, purpose of the study, limitations of the study, assumptions, definition of terms, and organization of the study.

Chapter II is a review of related literature, with attention directed toward known characteristics of technical students, and research and measurement of the four variables: interests, values, personality, and socioeconomic position.

Chapter III discusses the sample and the method of selecting it, a description of the groups within the sample, methods of collecting the data, a description of the instruments used to measure the variables, and statistical treatment of the data.

Chapter IV is an analysis of the statistical results discussed in terms of the three research questions.

Chapter V includes findings, conclusions, and recommendations for further research.

CHAPTER II

REVIEW OF THE LITERATURE

A new dimension in post-high school education has been gaining prominence over the last few decades. Technical institutes have become increasingly popular as alternatives to the traditional four-year academic college program. The provision of federal funds for these programs has contributed to their rapid proliferation, especially in the last ten years. The urgency with which these programs have been established has understandably not been without its difficulties, particularly in those areas surrounding methods for determining admissions standards and for creating curricula which will satisfy the needs of the students. Thus, the administrators and counselors are faced with the dual problem of operating the technical institute while at the same time attempting to establish viable guidelines for their operation. It has been common practice to use such intellectual factors as high school grades and scholastic achievement tests as criteria for admission to technical programs, just as they are used for admission to college academic programs. It would appear, however, that due to the different goals of technical programs (i.e., to prepare students for direct entry into technical career positions by concentrating on skills necessary for specific occupational choices without emphasizing "liberal arts" backgrounds), there might be other factors which could be used to predict success or failure of prospective technical education students. Romine

(1970) stressed the idea that intellectual measures are simply not enough for predicting even academic success, but emphasized that not enough intense interest has been shown over the last 20 years in identifying particular nonintellectual characteristics which can be reliably used for this purpose. This chapter, therefore, is an inspection of the research that has been conducted relative to nonintellectual variables, with particular attention directed toward technical students.

Personality

Among the studies investigating personality factors and their possible use as measures to predict academic achievement, results have been inconclusive at best, if not in some instances, contradictory. Stagner (1963, p. 660) viewed the problem in determining personality factors as follows:

It becomes increasingly clear that personality influences achievement in an indirect way, by affecting the degree to which use is made of the individual's potentialities and may explain the low correlations between personality test scores and achievement. At some point along the distribution, personality is an advantage in academic work while different amounts of the same personality variables may be disadvantageous, or may be operative in one direction in one case, the opposite in a similar situation.

In a study conducted by Stinson (1955) using the Minnesota Multiphase Personality Inventory (MMPI), significant differences were found between engineering graduates, non-engineering graduates, and dropouts. Brown and Dubois (1964), however, did find that academic achievement could be predicted for engineering students, using the MMPI for which three of the six scales showed significant differences.

When Miller (1966) compared technical students with engineering students, he found the engineering students to be more theoretically

oriented with a significantly higher need to dominate and more motivation for achievement. The technical students, on the other hand, had a greater need to be helped along and "nurtured."

In a comparison of persisting technical students with dropouts, Grande (1964) found that persisting students had a higher need for achievement and worked harder, using more self-control. In addition, Grande and Simons (1967) found that persisting students are more willing to struggle and plan for success and are more critical about their work habits. Hyman (1957) also determined the need to be "nurtured" as a significant personality variable distinguishing dropouts from persistors. Hoyt (1962) described the successful technical student as being "things" oriented and the dropout as being "people" oriented. Hanson and Taylor (1970) distinguished between personality factors and ability factors, determining that personality is a better predictor of persisting or dropping out, and ability is a better predictor of success. Thus, Cowell and Entwistle (1971) found that introverted personality types in a technical college only did marginally better than extroverts.

Personality factors have also been studied to determine their influence on career choices. There seems to be more proof that a relationship exists in this respect. Boe (1964) suggested that there are relationships between early experiences and attitudes, abilities, and personality factors which affect the ultimate vocational choice of the student. As Holland (1959) explained, "the person making a vocational choice in a sense 'searches' for situations which satisfy his hierarchy of adjustive orientation." Ospiow, Ashley, and Wall (1966), in a follow-up study, supported Holland's observation that there is a correlation between personality and career choice. Stewart (1971) felt that

personality tests and interest tests measured the same variables with respect to occupational choice, but found that interest tests were clearly the better predictors in that they measured the actual choices, while personality tests measured risk choices.

When Tallmadge and Shearer (1969) manipulated instructional methods and subject content, they produced a variance they called "learning style." From results of this study, they concluded that there is an identifiable nonintellectual profile for students who had higher achievement rates when taught certain subject matter in a certain way. This led them to hypothesize that technical students in a unique curriculum utilizing certain teaching methods could be expected to exhibit a predictable personality.

Interests

In attempting to predict success, Berdie and Sutter (1950) found the best overall predictor of grades in college to be the student's rank in high school. Miller (1966), in contradiction, concluded that it was more important for the technical student to have an intense interest in the application of mathematics and science, along with the maturity and personal characteristics which enable him to work for and with others. Ewens (1963), however, from a study of interests and aptitude, simply concluded that further research was needed to determine the reliability of using personality profiles, interests, and school grades in determining aptitudes.

When Speer (1948) compared freshman engineering students to other freshmen, he found different interest patterns. In a comparison of the interest patterns of four-year engineering students and two-year

technical program students by Herman and Ziegler (1960), it was found that interests were more closely related to degree of success than to type of curriculum.

As far as any one interest being a major predictor of success, both Miller (1966) and Anderson (1970) found an interest in the specialized fields of technology to be necessary. Greenwood (1963) earlier had concluded that there was no one interest factor which would predict success or failure in a technical program.

Values

Studies as to the use of values as a predictor of success have been conflicting in their results. For instance, Hilton and Kern (1964) found that values in college can change in as short a period as nine months, and Olive (1969) found the values of senior college students to be different from those of freshmen, particularly with respect to their perception of occupational role. Lindeman (1970) found that the values demonstrated by senior engineering students were different from those demonstrated by freshmen, sophomores, and juniors. All of these studies object to Jacobs' 1957 finding that the values of college students do not change during their college careers.

Miller (1966) reported that values were closely related to occupational choice, while Karn (1952) found significant differences between the values of various engineering majors (electrical, mechanical, etc.). Also with respect to the reliability of values, Rexler (1960) found significant differences between high achievers and low achievers, but Rightland (1965) found no significant differences between persistors and dropouts in a technical program.

Socioeconomic Position

It has long been assumed that few students from the lower socioeconomic class attend college and that, if they do, they stand a large chance of dropping out. In answer to this myth, Miller (1966) found that socioeconomic position influenced the decision to attend a technical school over a four-year college and Gillie (1970) found that the families of technical students have a lower annual income than families of junior college students. In support of this, statistics compiled by Lindsay, Hoover, and Kepler (1967) indicate that the average educational attainment of fathers of technical students was 11.2 years, while that of fathers of college students was 12.2 years. Medsker and Trent (1965) found similar data for the mothers, with the average educational level 11.4 years for mothers of technical students and 12.0 for mothers of college students. Bradfield (1967), after summarizing several studies, concluded that the rates of college attendance are greater for students from upper socioeconomic groups.

Studies by both Hoyt (1966) and the Educational Testing Service (1968) indicated that about 60 per cent of technical students do not receive financial assistance from their families, and Gillie (1970) found that 42 per cent of the technical students sampled in his research held full-time jobs, and another 21 per cent held part-time jobs.

At least two studies (Astin, 1964) (Caskey, 1943) have shown that the majority of college dropouts come from families with lower socioeconomic status. But Miller (1966) found no significant difference between persistors and dropouts on the basis of social class background and Schroder and Sledge (1966) indicated that personal variables and

motivation may be more important than their socioeconomic level as factors influencing college achievement.

Conclusions

The review of literature has shown that, although some research has been conducted to determine the effect of nonintellectual variables on achievement and persistence by post-high school students, most of the results have been inconclusive and clearly point out the need for further investigation into the variables of personality, interests, values, and socioeconomic position. In addition, much of this research was directed toward engineering students in four-year programs rather than toward technical students in two-year programs. Bradshaw (1968) described the trend in research studies as follows:

Research specifically pointed toward factors significantly related to academic success of technical education students has been limited in the past, but with the increasing societal demand and the ascending role of the technician, a small increase in studies was noted. However, the number of investigations has remained small and almost all of these reported are localized and limited in scope.

Without using any specific measures, Hall described the typical technical student as follows:

(He is) work oriented, pragmatic, has an unquenchable sense of curiosity and comes to school with clearly established career goals. The technical student will show a strong aptitude in the mathematical, scientific, and mechanical areas, but will show little interest in English and social studies. The technical student's scores on standardized intelligence tests may not be a good indication of his true potential as a student, since these tests are largely verbal based. Finally, the technical student does not possess a deep social consciousness concerning what some students consider great issues of the day.

It remains for descriptions such as the one above to be proved or disproved, so that counselors and administrators in technical education

programs will be able to have some reliable guidelines to use in selection, training, and occupational placement for technical education students.

CHAPTER III

METHODOLOGY

The purpose of this study was to provide information about characteristics of technical students that can be used to increase the effectiveness of counselors and administrators by particularly examining the nonintellectual variables of interests, values, personality, and socioeconomic position. Specifically, this study was directed toward finding significant differences on 31 selected scales measuring the variables among freshmen, second year students, persistors, and dropouts, and among the subgroups (persisting freshmen, freshman dropouts, persisting second year students, and second year dropouts). Characteristic profiles for the freshmen, second year students, persistors, and dropouts, as well as for the total group, were sought, based on the four tests used to measure the variables described in this chapter.

Selection of Sample

All students in this study were selected from the State Technical Institute at Memphis. Only one of the four state-supported technical schools in Tennessee was selected for study for parsimonious reasons, but the school selected had been in operation for four years and had a stable enrollment. Like its counterparts in other states, the State Technical Institute at Memphis encourages full- or part-time enrollment in both day and evening classes by residents with an ability and

interest in technical education. Every effort is made to individualize the various programs according to occupational needs, as evidenced by the 19 technological programs offered. Thus, the Institute had become one educational means for meeting the technical needs of business and industry.

The 209 subjects were selected in the following manner. Since all freshmen students were enrolled in one of 14 English classes, and since the students choose which class they wished to attend, it was determined that four of these classes (approximately 100 students) could be selected at random to obtain a representative sample of freshman students. All students present in these four randomly selected classes on the day of testing were considered as subjects (N = 137). The remaining group of 72 students included in the sample consisted of all first-quarter, second year students recorded as such in the Dean's office.

Testing was completed during the first two weeks of the 1971 fall quarter. Following two full quarters of school work (i.e., the end of the 1972 winter quarter, March 17), students who had dropped out were tabulated by the school counselor, thus forming two new groups for the study -- persistors (N = 191) and dropouts (N = 18). In addition, four subgroups were formed by crossing the freshman and second year students with the persistors and dropouts: freshman persistors (N = 124), freshman dropouts (N = 13), second year persistors (N = 67), and second year dropouts (N = 5).

Testing Procedure

Data collection was completed during the first two weeks of the 1971 fall quarter. All instruments were administered in group settings

with the assistance of counselors and administrators at the State Technical Institute at Memphis. Testing instructions outlined in the manual for each instrument were followed. The estimated time of testing was two hours, but actual time spent ranged from one hour and 40 minutes to two hours and 45 minutes. The average time spent was two hours and 15 minutes.

Each subject was given a personal letter over the signature of the director of the Institute (Appendix A) explaining the nature of the study. Subjects were also assured that publication of test results would be limited to group data. Tests were given in the following order: (1) Two Factor Index of Social Position; (2) Omnibus Personality Inventory; (3) Kuder Preference Record; and (4) Study of Values. Subjects could take a short break if they wished following the second test. Students who desired a personal interpretation or further consultation concerning test results were provided this service by the counseling staff at the Institute.

Description of Instruments

Measurement of Personality Variable

The Omnibus Personality Inventory (Form F) is a multiscale, true-false, self-administering personality inventory developed to assess personality characteristics of normal college students which Heist (1968) found particularly valuable for evaluating entering college students.

The Omnibus Personality Inventory has 385 items which yield scores on 14 scales described briefly as follows:¹

¹See Appendix B for a more complete description of these scales.

- (1) Thinking Introversion: Persons scoring high are characterized by a liking for reflective thought and academic activities.
- (2) Theoretical Orientation: High scorers prefer to deal with theoretical concerns.
- (3) Estheticism: High scorers have high level sensitivity and response to esthetic stimulation.
- (4) Complexity: High scorers are tolerant of ambiguity.
- (5) Autonomy: High scorers have a tendency to be independent of authority as traditionally imposed through social situations.
- (6) Religious Orientation: High scorers are skeptical of conventional religious beliefs.
- (7) Social Extroversion: High scorers display a strong interest in being with people.
- (8) Impulse Expression: High scorers have active imaginations.
- (9) Personal Integration: High scorers admit to few attitudes and behaviors which characterize socially alienated or emotionally disturbed persons.
- (10) Anxiety Level: High scorers deny that they have feelings or symptoms of anxiety.
- (11) Altruism: High scorers affiliate trustingly with people and are ethical in these relations.
- (12) Practical Outlook: High scorers are interested in that which is practical.

- (13) Masculinity-Femininity: This scale indicates differences in attitudes and interests between college males and females (male attitudes score high, female score low).
- (14) Response Bias: High scorers are concerned with making good impressions.

According to Kjeldergaard, five relevant factors are measured with the instrument: (1) autonomy-independence; (2) adjustment-maladjustment; (3) intellectualism; (4) masculinity-femininity; and (5) social inversion (Buros, 1965, p. 150). The instrument was found to be valid and reliable in measuring personality traits by Kjeldergaard, Wallen, and Lindeman (Buros, 1965).

The Omnibus Personality Inventory manual (Heist, 1968), regards the instrument to have three main purposes: (1) to furnish criterion scores, as independent variables, for the identification and selection of certain types of students; (2) to provide a basis for differentiating among student "types" and groups and describing the composition of incoming student bodies; and (3) to provide a basis for measuring the change over one or more years in a number of nonintellectual characteristics.

Measurement of Interest Variable

The Kuder Preference Record (Vocational Form CH) is a self-administering instrument designed to indicate an individual's interest in a small number of broad areas by using forced choice items arranged in triads for each of the three activities listed. The respondent is asked to select the one he most likes and the one he least likes. The

instrument has 168 items assessing interest in 10 major areas briefly described as follows (Kuder, 1960):²

- (1) Outdoor: Indicates a preference for work outdoors most of the time, usually with animals or growing things.
- (2) Mechanical: Indicates a preference for working with machines and tools.
- (3) Computational: Indicates a preference for working with numbers.
- (4) Scientific: Indicates a preference for discovering new facts and solving problems.
- (5) Persuasive: Indicates a preference for meeting and dealing with people and promoting projects or things to sell.
- (6) Artistic: Indicates a preference for doing creative work with one's hands.
- (7) Literary: Indicates a preference for reading and writing.
- (8) Musical: Indicates a preference for going to concerts, playing instruments, etc.
- (9) Social Service: Indicates a preference for helping people.
- (10) Clerical: Indicates a preference for office work.

The Kuder Preference Record is scored on an ipsative basis, that is, based on the individual rather than on a normative sample (Anastasi, 1968). Thus, a valid use of the instrument measures, according to the Kuder Preference Record manual, could be the comparison of an individual profile with the total group profile. If the subject chooses a specific

²See Appendix C for more complete descriptions of the scales.

selected activity more frequently than 90 per cent of his contemporaries, he is given a percentile rank of 90 on the scale for that activity (Kuder, 1960, p. 3).

This method of scoring, however, has led to some dissension as to the validity of the instrument. Buros, for example, felt that an ipsative score would be incomplete because there are an unequal number of items for the different scales. Since this would prevent the scores from being considered independently, Buros felt that the scores should be used to investigate profiles rather than the meaning of specific scores. Bauernfeind (1962) also objected to the use of an ipsative format as used in the Kuder Preference Record.

Anastasi (1968) pointed out that two individuals having identical scores on an ipsative measure may differ markedly in the absolute strength of their needs. However, she reported that the Kuder scales show reliabilities, as determined by the Kuder-Richardson Technique, clustering around .90, with stability over intervals of about one year. Tallmadge and Shearer (1969) also found the reliability of the instrument to be acceptable and that, in spite of the problem of ipsative scoring in relation to the absolute need of an individual and although some desirable factors are missing, the measure is still a useful instrument.

Since this study was interested in profiles of the subjects rather than pointing out "greatest" or "least" preferences, it was felt that the Kuder Preference Record was a valid instrument for measuring the interest variable. Thus, any persistent patterns among the subjects and within groups should become evident. The Kuder Preference Record

satisfied the criteria of acceptable reliability, suitable length, and ease of scoring.

Measurement of Values Variable

The relative prominence of six basic interests or motives in personality is measured by the Study of Values: A Scale for Measuring the Dominant Interests in Personality (Allport, Vernon, and Lindzey, 1960). This instrument is also a self-administered test in two parts, with 43 questions to which 120 total answers must be given. The 26 questions in Part I each require two answers; the 17 questions in Part II each require four answers. Each of the six values is measured by 20 of the answers. Thus, all subjects have the same total score, but each subscale is different. The six scales are described briefly as:³

- (1) Theoretical: Shows a dominant interest in the discovery of truth.
- (2) Economic: Characteristically interested in what is useful.
- (3) Aesthetic: Seeing value in form and harmony.
- (4) Social: Highest value is love for people.
- (5) Political: Primary interest in power.
- (6) Religious: Highest value is found in unity.

The Study of Values, like the Kuder Preference Record, uses an ipsative format, and has been criticized in a similar manner. However, both Radcliff and Hundleby (Buros, 1965) attest to the validity and usefulness of the instrument, especially when investigating individual and group profiles. This instrument also satisfied the criteria of

³See Appendix D for more complete descriptions.

acceptable reliability, suitable length, and ease of scoring (Allport, Vernon, and Lindzey, 1960).

Measurement of Socioeconomic Position Variable

The Two Factor Index of Social Position is designed to determine objectively an individual's position in the structure of society based on occupation and education.⁴ The Index of Social Position is based on three assumptions: (1) the existence of a status structure in today's society; (2) positions in this structure are determined mainly by a few commonly accepted characteristics; and (3) the characteristics symbolic of status may be scaled and combined so that a researcher can quickly, reliably, and meaningfully stratify the population under study (Hollingshead, 1957).

In order to determine the social position of an individual, the two factors are scaled and weighed: (1) the precise occupational role of the individual (or head of household) is given a weight of seven; and (2) the amount of formal education of the individual (or head of household) is given a weight of four. The factor scores are added to give an Index of Social Position score which is measured on a range divided into five intervals, each of which represents a social class (Holland, 1963). This instrument satisfied the criteria of suitable length and ease of scoring.

⁴See Appendix E for a more complete description of this measure.

Statistical Methods and Procedures

Research Question One

Are there any significant differences between (a) dropouts and persisting technical students, (b) entering freshmen and first-quarter second year students, (c) freshman persistors and freshman dropouts, or (d) freshman persistors and first-quarter second year students when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

To answer this question, an analysis of variances was conducted on the means for each of the four comparisons using the two-by-two factorial Anova method. With this method, an F-ratio between two mean scores is significant at the .05 level of confidence if $f > 2.65$. This test was used for all four measures.

Research Question Two

Are there any significant differences or characteristic profiles exhibited among (a) entering freshmen, first-quarter second year students, dropouts, and persistors or (b) persisting freshmen, freshman dropouts, persisting second year students, and second year dropouts when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

For the first part of this question, significant differences were also determined by the Anova method used in Research Question One. The second portion of this question was answered by using Bartlett's Test for Homogeneity of Variance, which used a Chi-square technique to determine significant differences at the .05 level of confidence.

Characteristic profiles were examined by plotting mean scores on each measure for each of the four groups in part (a) on line graphs from which visual inspections could easily be made.

Research Question Three

Is there a significant difference or characteristic profile exhibited when the total group is compared with the norm group on 31 scales measuring the variables of interests, values, personality, and socio-economic position?

This question was answered for the Omnibus Personality Inventory and the Study of Values by using a t-test (Popham, 1967, p. 149) to measure significant differences between mean scores for the total group and mean scores for the norm group at the .05 level of confidence ($t > 1.96$). Profiles were constructed for these two measures by the same method used in Research Question Two. Since a norm group does not exist per se for the Kuder Preference Record, a profile showing the relationship of the mean percentile scores to the fiftieth percentile (considered average) was constructed. The Index of Social Position, of course, does not have a norm group and, therefore, was not included in the discussion of this question.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to determine if there are any non-intellectual characteristics peculiar to successful technical students which can be used to increase the effectiveness of counselors and administrators. Specifically, information was sought concerning similarities and/or differences among entering freshmen, first-quarter second year students, persisting students, and dropouts. It was also of interest to determine if the total sample group exhibited any characteristics which were different from the norm. To achieve these objectives, four instruments having a total of 31 scales were used to measure the four variables of personality, interests, values, and social position. An analysis of the data collected which relates to the three related research questions is presented in this chapter.

Research Question One

Are there any significant differences between (a) dropouts and persisting technical students, (b) entering freshmen and first-quarter second year students, (c) freshman persistors and freshman dropouts, or (d) freshman persistors and first-quarter second year students when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

Dropouts Versus Persistors

The personality variable was measured by the 14 scales on the Omnibus Personality Inventory. An analysis of variance of the mean scores (see Table I) revealed that the dropouts scored significantly different from the persistors on three items: Theoretical Orientation, Impulse Expression, and Personal Integration. Mean scores indicated that persistors scored higher than the dropouts on Theoretical Orientation and Personal Integration, while dropouts scored higher on the Impulse Expression. The remaining 11 scales did not show any significant differences at the .05 level of confidence.

The Kuder Preference Record was used to measure the variable of interests. An analysis of variance as shown in Table I indicated that there were significant differences between the dropouts and persistors on three of the 10 scales: Mechanical, Scientific, and Musical. From the mean scores it can be seen that the persistors scored higher on the Mechanical and Scientific scales, while the dropouts scored higher on the Musical scale.

Six scales of the Study of Values were used to measure the values variable. The analysis of variance for these scales which is shown in Table I indicates that there were no significant differences between the dropouts and persistors when viewed at the .05 level of confidence.

Also indicated in Table I is the analysis of variance for the Two Factor Index of Social Position, the measure used to test the socio-economic position variable. There was no significant difference for this measure at the .05 level of confidence.

TABLE I

COMPARISON OF PERSISTORS AND DROPOUTS TO DETERMINE SIGNIFICANT DIFFERENCES ON 31 SELECTED NONINTELLECTUAL SCALES

Scales	Persistors (N = 191)	Dropouts (N = 18)	f-Scores
<u>Omnibus Personality Inventory</u>			
Thinking Introversion	19.9	19.0	.35
Theoretical Orientation	17.6	14.7	6.18
Estheticism	9.5	10.0	.26
Complexity	13.9	13.9	.01
Autonomy	20.0	17.8	1.96
Religious Orientation	11.4	10.1	1.40
Social Extroversion	20.6	21.1	.09
Impulse Expression	29.5	33.5	3.25
Personal Integration	29.0	24.8	2.82
Anxiety Level	12.2	10.4	1.80
Altruism	16.6	15.6	.75
Practical Outlook	18.5	19.6	.92
Masculinity-Femininity	31.8	30.3	1.29
Response Bias	11.8	10.6	1.44
<u>Kuder Preference Record</u>			
Outdoor	44.2	41.4	.18
Mechanical	48.8	38.4	2.99
Computational	62.3	60.3	.11
Scientific	51.8	37.8	4.80
Persuasive	50.5	55.4	.80
Artistic	68.0	68.5	.01
Literary	44.3	47.5	.25
Musical	53.8	67.4	4.35
Social Service	48.0	48.9	.02
Clerical	56.7	66.0	2.45
<u>Study of Values</u>			
Political	40.8	41.8	.60
Theoretical	42.6	40.2	2.44
Economic	42.7	43.2	.08
Aesthetic	37.3	37.7	.04
Social	37.5	36.2	.61
Religious	38.1	40.0	.78
<u>Index of Social Position</u>	45.5	46.4	.06

*Significant at .05 level, $f > 2.65$, $df = 3$.

Entering Freshmen Versus First-Quarter Second

Year Students

As can be seen from Table II, the analysis of variance for the 14 scales of the Omnibus Personality Inventory indicated significant differences on the following nine scales: Thinking Introversion, Theoretical Orientation, Complexity, Autonomy, Religious Orientation, Altruism, Practical Outlook, Masculinity-Femininity, and Response Bias. Mean scores indicate that second year students scored higher than freshmen on all nine scales except one -- Practical Outlook.

The interests variable was measured by the 10 scales on the Kuder Preference Record. Table II shows that, when an analysis of variance was completed for the mean scores, there were significant differences on six of the scales: Outdoor, Mechanical, Scientific, Persuasive, Artistic, and Clerical. The mean scores indicated that freshmen scored higher on Persuasive, Artistic, and Clerical, while the second year students scored higher on Outdoor, Mechanical, and Scientific.

When the mean scores on the Study of Values were analyzed to determine significant differences for the values variable, it was found that four scales showed significant differences at the .05 level of confidence: Theoretical, Aesthetic, Economic, and Social. The freshmen scored higher on the Social and Aesthetic scales, while second year students scored higher on the Economic and Theoretical scales.

Table II also indicates a significant difference between the freshmen and second year students on the Two Factor Index of Social Position at the .05 level of confidence. The freshmen scored higher on this scale than the second year students.

TABLE II

COMPARISON OF FRESHMEN AND SECOND YEAR STUDENTS TO DETERMINE
SIGNIFICANT DIFFERENCES ON 31 SELECTED
NONINTELLECTUAL SCALES

Scales	Freshmen (N = 137)	Second Year Students (N = 72)	f-Scores
<u>Omnibus Personality Inventory</u>			
Thinking Introversion	18.9	21.7	9.26
Theoretical Orientation	16.2	19.4	20.24
Estheticism	9.6	9.5	.01
Complexity	13.1	15.4	16.70
*Autonomy	18.5	22.4	15.85
Religious Orientation	10.8	12.2	4.40
Social Extroversion	20.8	20.4	.19
Impulse Expression	29.6	30.3	.46
Personal Integration	28.3	29.3	.37
Anxiety Level	11.8	12.7	1.15
Altruism	16.0	17.6	4.29
Practical Outlook	19.2	17.5	6.02
Masculinity-Femininity	31.1	32.8	4.60
Response Bias	11.3	12.5	3.92
<u>Kuder Preference Record</u>			
Outdoor	40.3	50.9	7.35
Mechanical	43.3	56.8	13.80
Computational	62.7	61.1	.21
Scientific	45.8	59.7	12.80
Persuasive	56.3	40.8	22.26
Artistic	70.0	64.4	2.82
Literary	46.1	41.8	1.21
Musical	56.4	52.2	1.03
Social Service	50.1	44.4	2.21
Clerical	63.8	45.5	26.50
<u>Study of Values</u>			
Political	41.1	40.5	.47
Theoretical	41.3	44.4	11.77
Economic	41.8	44.6	7.04
Aesthetic	38.0	36.2	2.82
Social	38.0	36.3	2.87
Religious	38.7	37.6	.62
Index of Social Position	46.8	43.1	2.82

*Significant at .05 level of confidence; $f > 2.65$; $df = 3$.

Persisting Freshmen Versus Freshman Dropouts

As can be seen from Table III, when an analysis of variance was completed for all 31 scales measuring the variables of personality, interests, values, and socioeconomic position, no significant differences were found between persisting freshmen and freshman dropouts at the .05 level of confidence.

Persisting Freshmen Versus First-Quarter Second

Year Students

Table IV shows that significant differences existed for seven of the 14 scales of the Omnibus Personality Inventory used to measure the personality variable. These seven scales were: Theoretical Orientation, Complexity, Autonomy, Religious Orientation, Thinking Introversion, Practical Outlook, and Masculinity-Femininity. Mean scores indicate that second year students scored higher on all of these seven scales except Practical Outlook, on which the persisting freshmen scored higher.

An analysis of variance conducted for the 10 scales of the Kuder Preference Record revealed significant differences on five of the scales used to measure the variable of interests: Outdoor, Mechanical, Scientific, Persuasive, and Clerical. Mean scores indicated that second year students scored higher on three of these scales -- Scientific, Mechanical, and Outdoor -- while persisting freshmen scored higher on the Persuasive and Clerical scales (see Table IV).

After analyzing the mean scores on the Study of Values (Table IV), it was found that significant differences existed on two scales -- Theoretical and Economic. The second year students had higher mean scores on both of these scales.

TABLE III

COMPARISON OF FRESHMAN DROPOUTS AND PERSISTING FRESHMEN TO
DETERMINE SIGNIFICANT DIFFERENCES ON 31 SELECTED
NONINTELLECTUAL SCALES

Scales	Freshman Dropouts (N = 13)	Persisting Freshmen (N = 124)	f-Scores
<u>Omnibus Personality Inventory</u>			
Thinking Introversion	18.31	18.93	.12
Theoretical Orientation	14.38	16.41	2.40
Estheticism	9.69	9.56	.01
Complexity	13.38	13.03	.09
Autonomy	18.00	18.57	.11
Religious Orientation	10.30	10.86	.20
Social Extroversion	19.69	20.94	.51
Impulse Expression	33.15	29.18	2.42
Personal Integration	26.38	28.50	.53
Anxiety Level	10.92	10.89	.75
Altruism	14.85	16.15	.75
Practical Outlook	19.85	19.16	.25
Masculinity-Femininity	31.23	31.04	.01
Response Bias	10.61	11.33	.42
<u>Kuder Preference Record</u>			
Outdoor	43.15	40.01	.18
Mechanical	38.07	43.86	.69
Computational	59.85	63.02	.19
Scientific	35.08	46.99	2.60
Persuasive	56.46	56.23	.00
Artistic	73.31	69.66	.31
Literary	51.15	45.51	.62
Musical	65.15	55.56	1.70
Social Service	49.62	50.19	.01
Clerical	69.77	63.18	.98
<u>Study of Values</u>			
Political	42.00	40.95	.50
Theoretical	36.46	41.60	3.22
Economic	44.07	41.59	1.71
Aesthetic	38.15	37.98	.01
Social	36.84	38.08	.42
Religious	39.69	38.56	.25
<u>Index of Social Position</u>	48.77	46.65	.23

TABLE IV

COMPARISON OF PERSISTING FRESHMEN AND SECOND YEAR STUDENTS TO
DETERMINE SIGNIFICANT DIFFERENCES ON 31 SELECTED
NONINTELLECTUAL SCALES

Scales	Persisting Freshmen (N = 124)	Second Year Students (N = 72)	f-Scales
<u>Omnibus Personality Inventory</u>			
Thinking Introversion	18.94	21.67	8.47
Theoretical Orientation	16.41	19.37	17.50
Estheticism	9.56	9.51	.01
Complexity	13.03	15.43	16.47
Autonomy	18.57	22.38	14.61
Religious Orientation	10.86	12.20	4.02
Social Extroversion	20.94	20.40	.32
Impulse Expression	29.18	30.34	.73
Personal Integration	28.50	29.31	.27
Anxiety Level	11.90	12.70	.95
Altruism	16.15	17.63	3.50
Practical Outlook	19.17	17.50	5.43
Masculinity-Femininity	31.04	32.79	4.61
Response Bias	11.33	17.50	3.40
<u>Kuder Preference Record</u>			
Outdoor	40.01	50.91	7.49
Mechanical	43.86	56.76	12.46
Computational	63.01	61.11	.27
Scientific	49.99	57.73	10.53
Persuasive	56.23	40.78	21.43
Artistic	69.66	64.42	2.36
Literary	45.51	41.82	.91
Musical	55.56	52.22	.70
Social Service	50.19	44.43	2.14
Clerical	63.18	45.51	24.73
<u>Study of Values</u>			
Political	40.95	40.45	.34
Theoretical	41.60	44.43	10.57
Economic	41.59	44.56	7.69
Aesthetic	37.98	36.15	2.75
Social	38.09	36.29	2.98
Religious	38.56	37.64	.52
<u>Index of Social Position</u>	46.65	43.07	2.45

*Significant at .05 level of confidence; $f > 3.89$; $df = 1 - 194$.

There was no significant difference found between the mean scores of the persisting freshmen and the mean scores of the second year students when an analysis of variance was conducted on the Two Factor Index of Social Position (see Table IV).

Summary of Research Question One

Among the four comparisons for which an analysis of variance was conducted, the most significant differences were found between freshmen and second year students on 20 out of the 31 selected scales. The comparison between freshmen persisting students and second year students revealed significant differences for 14 of the 31 scales. Only six out of the 31 scales showed significant differences between persisting and dropout students, and when freshmen dropouts and freshmen persistors were compared, no significant differences were found.

On the Omnibus Personality Inventory, used to measure the variables of personality, only three of the 14 scales did not display significant differences on any of the four comparisons. These were Estheticism, Social Extroversion, and Anxiety Level. Fewer scales were found to be significantly different when the dropouts were compared to the persistors than when the freshmen were compared to the second year students. Both comparisons showed Theoretical Orientation to be significant different, but Impulse Expression and Personal Integration, which were significantly different for persistors versus dropouts, did not show significant differences for freshmen versus second year students, while Thinking Introversion, Complexity, Autonomy, Religious Orientation, Altruism, Practical Outlook, Masculinity-Femininity, and Response Bias were significantly different between freshmen and second year students,

but not between persistors and dropouts. When the significantly different scales between freshmen and second year students were compared to those between persisting freshmen and second year students, it was found that the same significant differences existed for both comparisons, although in the latter group (when the freshman dropouts were eliminated from the mean scores), Altruism and Response Bias were no longer significant different. When the results of the analysis of variance conducted between freshman dropouts and persisting freshmen and between dropouts and persistors were compared, it was found that three scales were significantly different for the latter comparison, while none were significantly different in the former comparison.

Three of the 10 scales of the Kuder Preference Record (used to measure the interests variable) did not exhibit significant differences on any of the four comparisons. These were: Computational, Literary, and Social Service. The Mechanical and Scientific scales showed significant differences for three of the comparisons. The scales of Outdoor, Mechanical, Scientific, Persuasive, Artistic, and Clerical were significantly different for freshmen versus second year students as well as for persisting freshmen versus second year students with the exception of the Artistic scale, which was not significantly different for the latter group (when freshmen dropouts were not included). It was found that the Musical scale was significantly different between dropouts and persistors, but not between freshmen and second year students, where significant differences were found for the Outdoor, Artistic, and Clerical scales. Again, the Mechanical, Scientific, and Musical scales were significantly different when persistors were compared to dropouts,

but no significant differences at all were found when freshman persistors were compared to freshman dropouts.

No significant differences on any of the six Study of Values scales existed for either the comparison between dropouts and persistors or the comparison between freshman persistors and freshman dropouts. The Theoretical scale was significantly different when the freshmen were compared to the second year students, as well as when the persisting freshmen were compared to the second year students. However, for the latter comparison (with freshman dropouts excluded), the Economic and not the Aesthetic and Social scales showed a significant difference.

On the Index of Social Position, the only comparison which revealed a significant difference was conducted between freshmen and second year students.

Conclusions and implications which may be drawn from the analyses presented in this section are discussed in Chapter V with emphasis upon interpretations of the 31 selected scales.

Research Question Two

Are there any significant differences or characteristic profiles exhibited among (a) entering freshmen, first-quarter second year students, dropouts, and persistors or (b) persisting freshmen, freshman dropouts, persisting second year students, and second year dropouts when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared? The first portion of this research question was tested using the analysis of variance technique to determine significant differences among the

four groups. The second portion of the question was tested using Bartlett's Test for Homogeneity of Variance among the four groups.

Comparison Among Freshmen, Second Year

Students, Persistors, and Dropouts

Personality Variable. Significant differences were found to exist between the mean scores of the four groups at the .05 level of confidence on five of the 14 Omnibus Personality Inventory scales: Thinking Introversion, Theoretical Orientation, Complexity, Autonomy, and Masculinity-Femininity (see Table V). These differences are reflected in Figure 1, which compares the profiles of the four groups and at the same time shows that the four groups follow each other closely in terms of high and low scoring areas. All four groups tended to score high on Impulse Expression, Personal Integration, and Masculinity-Femininity. They tended to score low on Estheticism, Religious Orientation, Altruism, and Response Bias. Of these high and low areas, only Masculinity-Femininity exhibited a significant difference.

Interest Variable. On the Kuder Preference Record, the analysis of variance between the mean scores of the four groups showed significant differences for five of the 10 scales: Outdoor, Mechanical, Scientific, Persuasive, and Clerical (see Table VI). Figure 2 shows that the profiles for the four groups were not as closely aligned as for the personality variable. All four groups tended to score high on the Computational and Artistic scales, but low on the Literary scale. The freshmen and the persistors seemed to follow roughly the same pattern, while the dropouts were greatly divergent from the second year students as evidenced on the high Mechanical and Scientific scores of the second

TABLE V

COMPARISON OF MEAN SCORES OF FRESHMEN, SECOND YEAR STUDENTS, PERSISTORS, AND DROPOUTS
TO DETERMINE SIGNIFICANT DIFFERENCES ON PERSONALITY VARIABLES

Omnibus Personality Inventory Scales	Mean Scores				f-Scores
	Freshmen (N = 137)	Second Year Students (N = 72)	Persistors (N = 191)	Dropouts (N = 18)	
Thinking Introversion	18.8	21.6	19.9	19.0	3.20
Theoretical Orientation	16.2	19.4	17.6	14.7	9.05
Estheticism	9.6	9.5	9.5	10.5	.21
Complexity	13.1	15.4	13.8	13.9	5.57
Autonomy	18.5	22.4	20.0	17.8	6.58
Religious Orientation	10.9	12.2	11.4	10.1	2.20
Social Extroversion	20.8	20.4	20.6	21.1	1.07
Impulse Expression	29.5	30.3	29.4	33.5	1.24
Personal Integration	28.2	29.3	29.0	24.7	1.62
Anxiety Level	11.8	12.7	12.2	10.4	1.27
Altruism	16.0	17.6	16.6	15.5	1.72
Practical Outlook	19.2	17.5	18.5	19.6	2.38
Masculinity-Femininity	31.0	32.7	31.7	30.2	3.13
Response Bias	11.2	12.5	11.7	10.5	1.95

*Significant at .05 level of confidence; $f > 2.65$; $df = 3$.

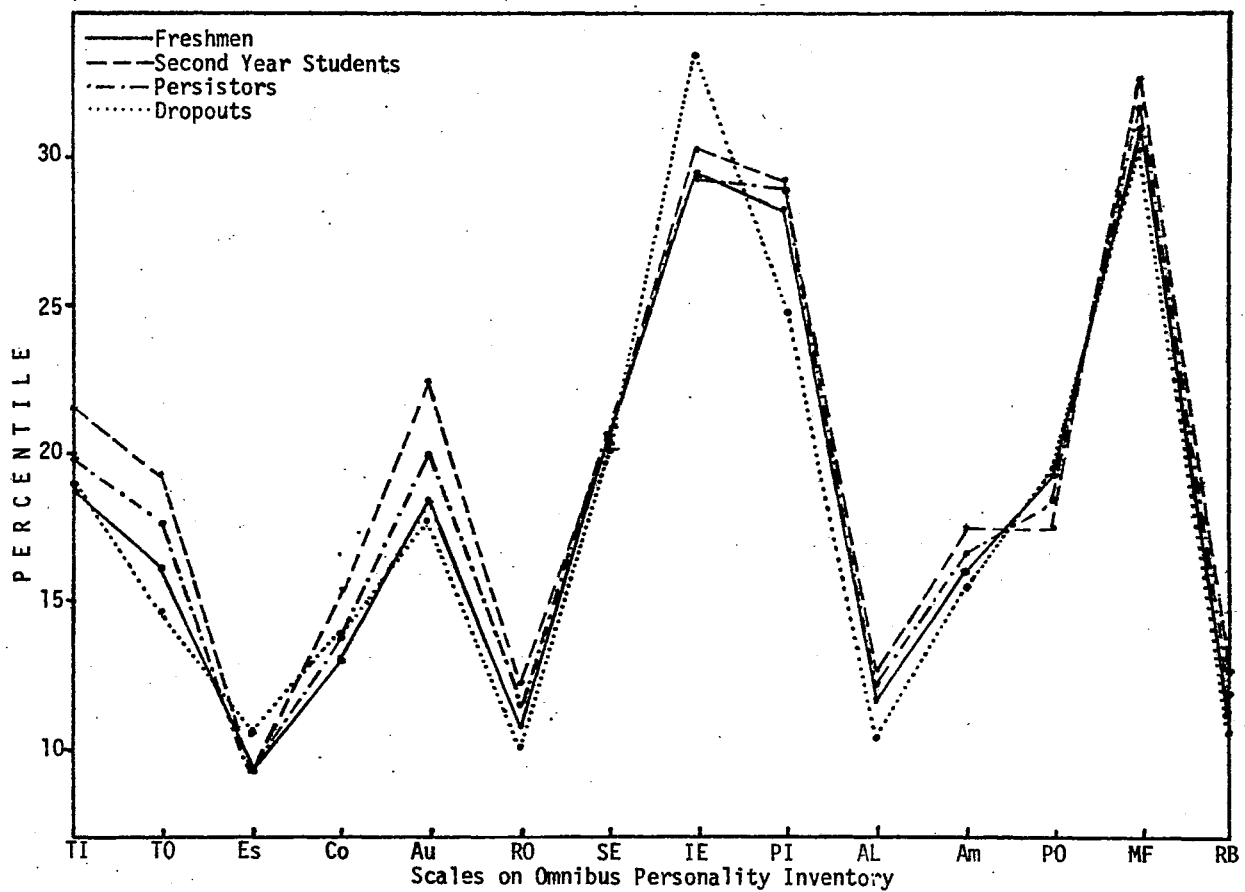


Figure 1. Characteristic Profiles for Freshmen, Second Year Students, Persistors, and Dropouts Drawn From Mean Scores on the Omnibus Personality Inventory Scales

TABLE VI

COMPARISON OF MEAN SCORES OF FRESHMEN, SECOND YEAR STUDENTS, PERSISTORS, AND DROPOUTS
TO DETERMINE SIGNIFICANT DIFFERENCES ON INTEREST VARIABLES

Kuder Preference Record Scales	M e a n S c o r e s				f-Scores
	Freshmen (N = 137)	Second Year Students (N = 72)	Persistors (N = 191)	Dropouts (N = 18)	
Outdoor	40.3	50.9	44.2	41.4	3.03*
Mechanical	43.3	56.8	48.8	38.4	5.87*
Computational	62.7	61.1	62.3	60.3	.13
Scientific	45.8	59.7	51.8	37.8	5.88*
Persuasive	56.3	40.8	50.5	55.4	8.04*
Artistic	70.0	64.4	68.0	68.5	1.28
Literary	46.1	41.8	44.3	47.5	.65
Musical	56.4	52.2	53.8	67.4	2.06
Social Service	50.1	44.4	48.0	48.9	.76
Clerical	63.8	45.5	56.7	66.0	9.70*

*Significant at .05 level of confidence; $f > 2.65$; $df = 3$.

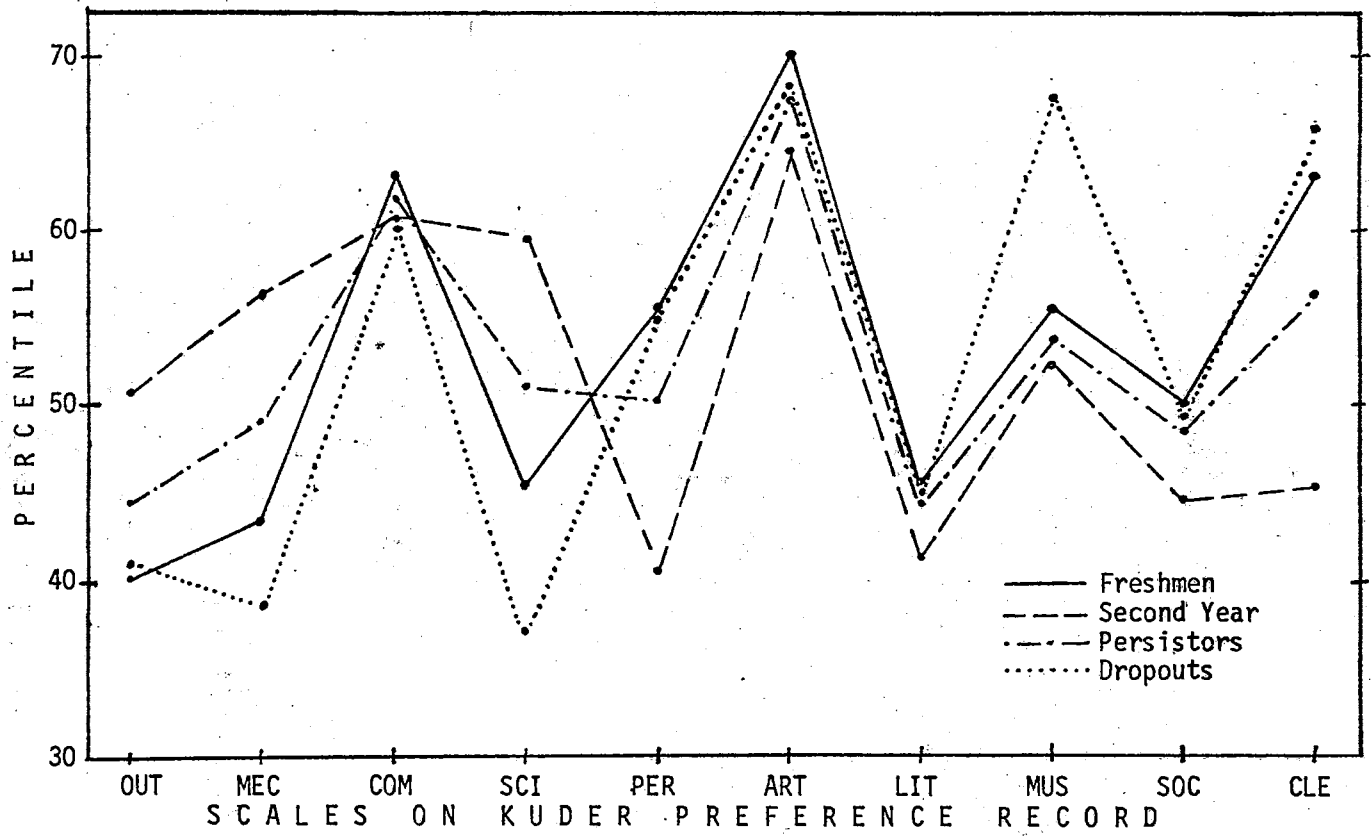


Figure 2. Characteristic Profiles for Freshmen, Second Year Students, Persistors, and Dropouts Drawn From Mean Scores on the Kuder Preference Record Scales

year students and low scores on these scales by the dropouts and by high scores by dropouts on Persuasive, Musical, and Clerical scales as opposed to the second year students' low scores.

Value Variables. When an analysis of variance was conducted among the mean scores of the four groups for the Study of Values, significant differences were found on two of the six scales -- Theoretical and Economic. Second year students seemed to have the most extreme high scores (Theoretical and Economic scales) and low scores (Aesthetic and Social scales) of the four groups' profiles (Figure 3), while the freshmen had the least varying profile (no extreme high or low scores). Again, the profile for the dropouts varied more than the profiles for the other three groups, with the highest score on the Economic scale and the lowest score on the Social scale. The analysis of variance for the value variable is shown in Table VII.

Socioeconomic Position. Figure 4 is a bar graph depicting the socioeconomic positions of the groups relative to each other. An analysis of variance did not indicate a significant difference among the mean scores. According to Hollingshead (1957, p. 10), all groups belong to Social Class IV (upper-middle class, range from 44 to 60) except second year students, who belong to Social Class III (middle class, range from 28 to 43). However, with the upper cutoff point for Class III being 43, and the score for second year students being 43.1, it can be seen that this is a very fine differentiation, indeed.

Bartlett's Test for Homogeneity of Variance

The homogeneity of variance among freshman persistors, second year

TABLE VII

COMPARISON OF MEAN SCORES OF FRESHMEN, SECOND YEAR STUDENTS, PERSISTORS, AND DROPOUTS
TO DETERMINE SIGNIFICANT DIFFERENCES ON VALUE VARIABLES

Study of Values Scales	Mean Scores				f-Scores
	Freshmen (N = 137)	Second Year Students (N = 72)	Persistors (N = 191)	Dropouts (N = 18)	
Political	41.1	40.5	40.8	41.8	
Theoretical	41.3	44.3	42.5	40.2	5.10*
Economic	41.8	44.5	42.7	43.2	3.25*
Aesthetic	38.0	36.1	37.2	37.7	.96
Social	38.9	36.2	37.5	36.1	1.17
Religious	38.7	37.6	38.1	40.0	

*Significant at .05 level of confidence; $f > 2.65$; $df = 3$.

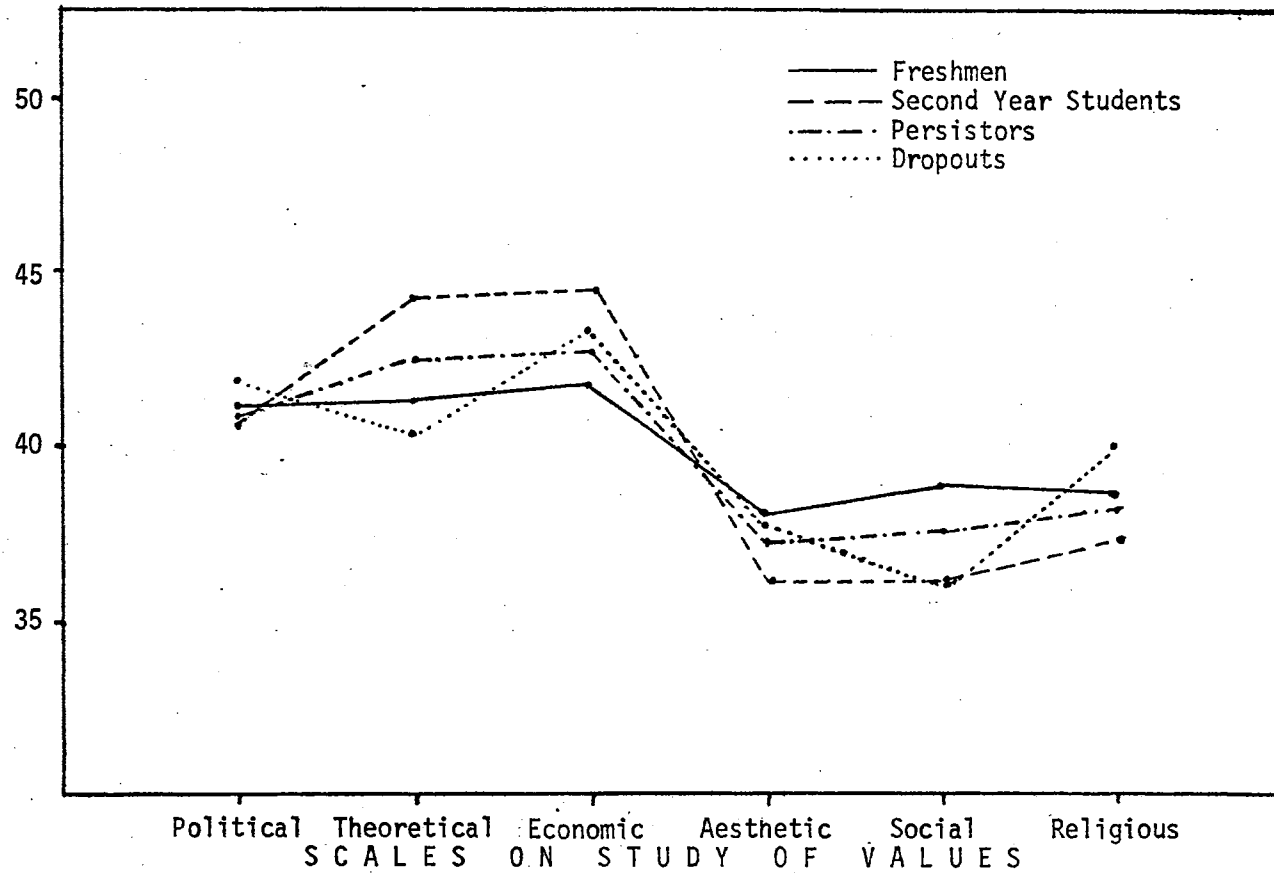


Figure 3. Characteristic Profiles for Freshmen, Second Year Students, Persistors, and Dropouts Drawn From Mean Scores on the Study of Values Scales

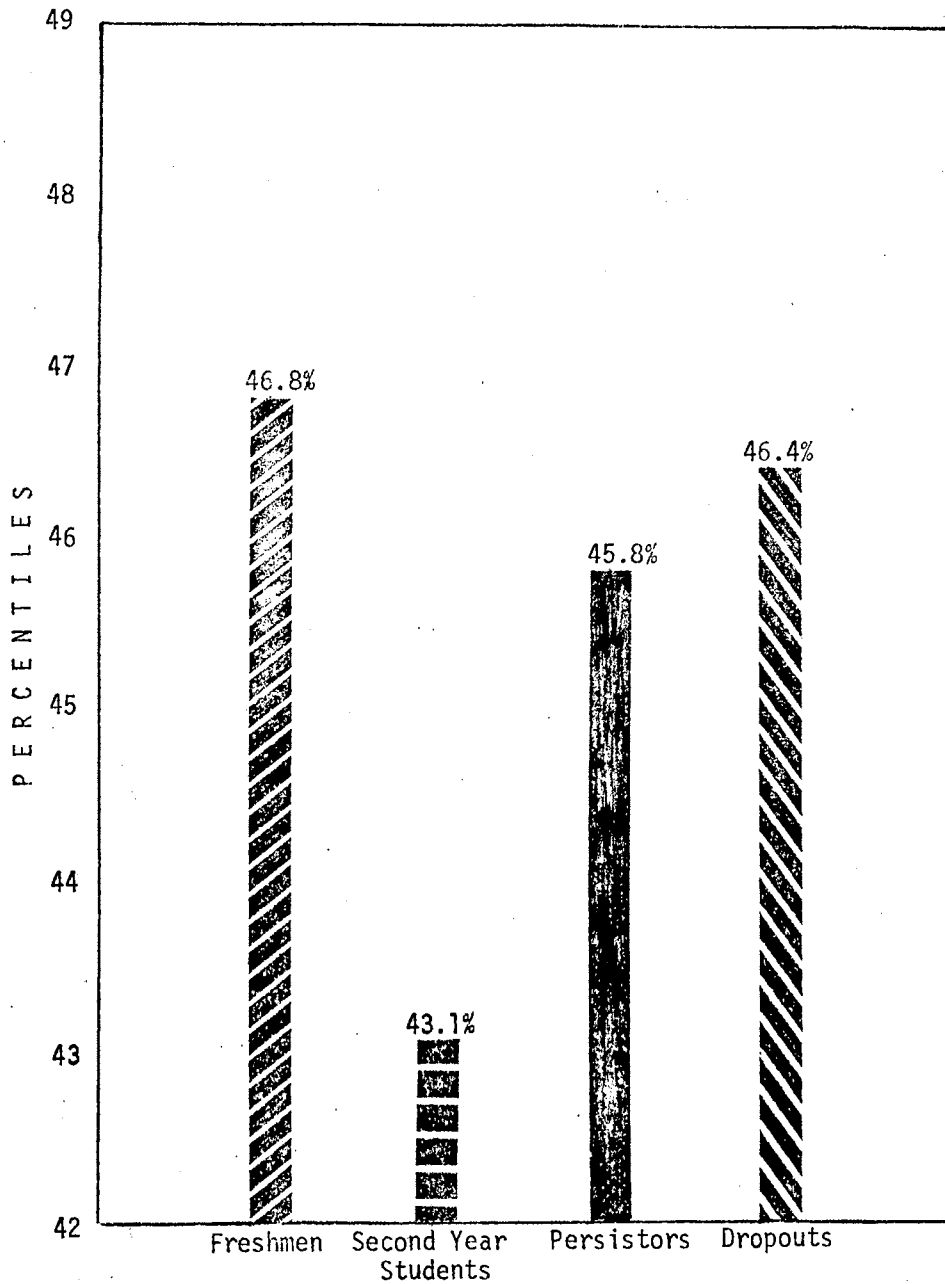


Figure 4. Characteristic Profiles for Freshmen, Second Year Students, Persistors, and Dropouts Drawn From the Mean Scores on the Two Factor Index of Social Position

persistors, freshman dropouts, and second year dropouts was computed using Bartlett's Test. Only one of the 31 selected scales was found to have a significantly different Chi-square value at the .05 level of confidence. This scale was one of the personality variable measures -- Anxiety Level -- which was extremely high for the second year persistors and low for the other three groups. (See Table VIII for the results of this test.)

Research Question Three

Is there a significant difference or characteristic profile exhibited when the total group is compared with the norm group on 31 selected scales measuring the variables of personality, interests, values, and socioeconomic position?

For two of the variables (personality and values), t-tests were conducted to determine any significant differences between mean scores for the total sample group and mean scores for a norm group.

On the Omnibus Personality Inventory, only two of the 14 scales did not exhibit significant differences -- Impulse Expression and Personal Integration. For the remaining 12 scales (Thinking Introversion, Theoretical Orientation, Estheticism, Complexity, Autonomy, Religious Orientation, Social Extroversion, Anxiety Level, Altruism, Practical Outlook, Masculinity-Femininity, and Response Bias), the total group scored lower than the norm group on all but one -- Practical Outlook. These figures can be seen in Table IX. Figure 5 is a comparison of the profile for the total group with the norm group. The norm group used for this test was composed of 7,283 male college freshmen.

TABLE VIII

RESULTS OF BARTLETT'S TEST FOR HOMOGENEITY OF VARIANCE AMONG FRESHMAN PERSISTORS, SECOND YEAR PERSISTORS, FRESHMAN DROPOUTS, AND SECOND YEAR DROPOUTS ON THE MEAN SCORES OF 31 SELECTED NONINTELLECTUAL SCALES

Scales	Freshman Persistors (N = 124)	Second Year Persistors (N = 67)	Freshman Dropouts (N = 13)	Second year Dropouts (N = 5)	χ^2
<u>Omnibus Personality Inventory</u>					
Thinking Introversion	42.240	37.593	20.397	24.200	2.01
Theoretical Orientation	20.667	26.224	16.756	19.300	1.19
Estheticism	18.931	18.668	22.064	31.000	0.46
Complexity	16.926	15.158	13.923	1.300	4.35
Autonomy	38.084	58.245	19.333	17.200	5.33
Religious Orientation	18.802	24.517	12.567	1.800	5.39
Social Extroversion	36.655	51.888	32.064	13.700	2.86
Impulse Expression	78.640	89.467	52.974	124.300	1.03
Personal Integration	102.366	115.892	71.090	74.300	0.79
Anxiety Level	14.990	63.393	14.077	10.700	29.09*
Altruism	28.667	30.683	7.474	3.300	6.76
Practical Outlook	22.321	25.722	12.641	21.200	1.21
Masculinity-Femininity	31.494	24.836	24.192	47.700	1.02
Response Bias	15.199	24.411	6.090	10.300	5.42
<u>Kuder Preference Record</u>					
Outdoor	658.016	863.120	591.974	301.700	2.89
Mechanical	575.566	653.403	572.244	604.700	.34
Computational	632.862	600.888	674.641	615.300	.09
Scientific	670.138	720.138	285.410	1284.000	3.96
Persuasive	400.392	715.986	375.436	402.700	6.82

TABLE VIII (Continued)

Scales	Freshman Persistors (N = 124)	Second Year Persistors (N = 67)	Freshman Dropouts (N = 13)	Second Year Dropouts (N = 5)	χ^2
<u>Kuder Preference Record (Continued)</u>					
Artistic	513.608	546.589	351.231	822.500	1.13
Literary	618.561	786.640	420.308	1067.500	2.28
Musical	630.964	885.290	367.308	471.700	3.73
Social Service	720.352	682.298	414.923	783.200	1.09
Clerical	504.976	704.752	679.859	560.200	1.88
<u>Study of Values</u>					
Theoretical	32.810	49.396	23.103	37.700	2.52
Economical	44.098	66.089	27.204	63.500	2.80
Aesthetic	57.414	53.167	68.808	44.300	.17
Social	44.716	60.310	30.974	13.300	2.56
Political	26.957	44.847	15.166	20.800	4.14
Religious	61.680	99.911	50.231	18.200	3.91
<u>Index of Social Position</u>	235.545	250.297	209.026	168.200	.18

*Significant at the .05 level of confidence.

TABLE IX

RESULTS OF THE t-TEST FOR SIGNIFICANT DIFFERENCES BETWEEN TOTAL
SAMPLE GROUP AND NORM GROUP ON THE 14 SCALES OF
THE OMNIBUS PERSONALITY INVENTORY

Omnibus Personality Inventory Scales	Mean Scores		t-Test
	Total Sample Group	Norm Group	
Thinking Introversion	19.8	24.5	2.32*
Theoretical Orientation	17.3	21.1	3.08*
Estheticism	9.6	10.6	3.29*
Complexity	13.9	15.6	3.65*
Autonomy	19.8	24.0	2.21*
Religious Orientation	11.3	12.6	3.25*
Social Extroversion	20.7	22.6	2.27*
Impulse Expression	29.8	30.7	1.60
Personal Integration	23.9	30.3	1.42
Anxiety Level	12.1	12.5	2.63*
Altruism	16.6	19.2	2.76*
Practical Outlook	18.6	15.1	3.03*
Masculinity-Femininity	31.7	33.1	2.67*
Response Bias	11.7	13.7	3.46*

*Significant at the .05 level of confidence; $t > 1.96$.

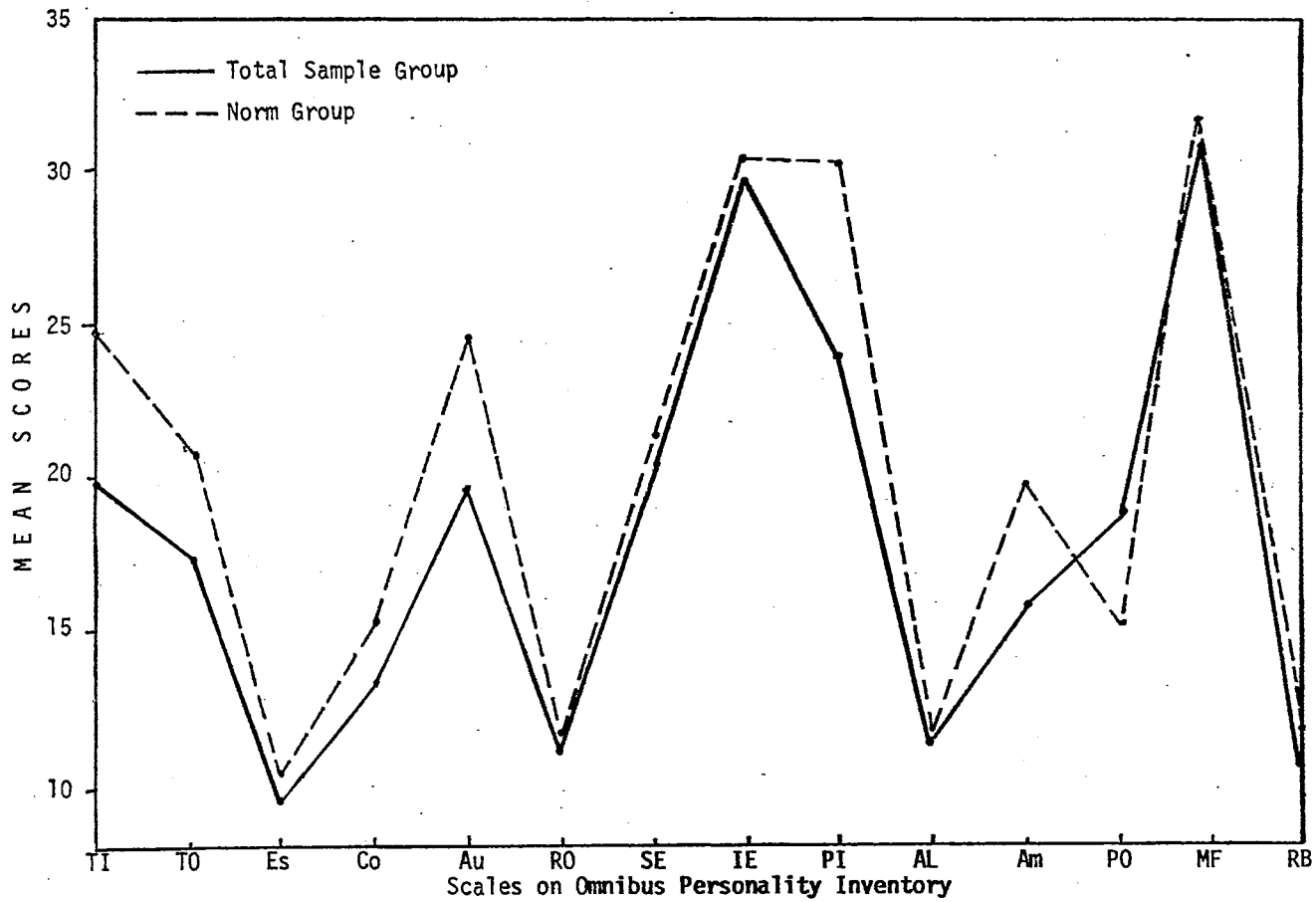


Figure 5. Comparison of Profile of Total Sample Group With Profile of Norm Group on Personality Variables

The interest variable, measured by the 10 scales of the Kuder Preference Record, could not be tested for significant differences between the total group and a norm group due to problems in ipsative scaling. Thus, Figure 6 represents a profile of the percentile scores for the total group on the 10 scales. According to the manual for the Kuder Preference Record, the fiftieth percentile is an average score for each scale. Therefore, if there were no high scores (above the seventy-fifth percentile) or low scores (below the twenty-fifth percentile), it is evident that there are no exceptional interests characteristic to the profile. It would appear, then, from the profile shown in Figure 6, that there were no specific areas of interest by which the total group could be characterized.

When a t-test was run to compare mean scores for the total group with mean scores for the norm group (consisting of 5,894 liberal arts college males), significant differences were found for four of the six Study of Values scales -- Theoretical, Economic, Social, and Political. As can be seen from Table X, the total sample group scored higher than the norm group on the Economic and Social scales and lower on the Theoretical and Political scales. Figure 7 illustrates these differences by comparing the profile of the total sample group with the norm group.

Since a norm group does not exist for the Two Factor Index of Social Position, it was not possible to run a t-test with the total sample group. Reference is made to the discussion of Research Question Two in which the socioeconomic positions of the four groups were compared and it was found that they were very similar in this respect.

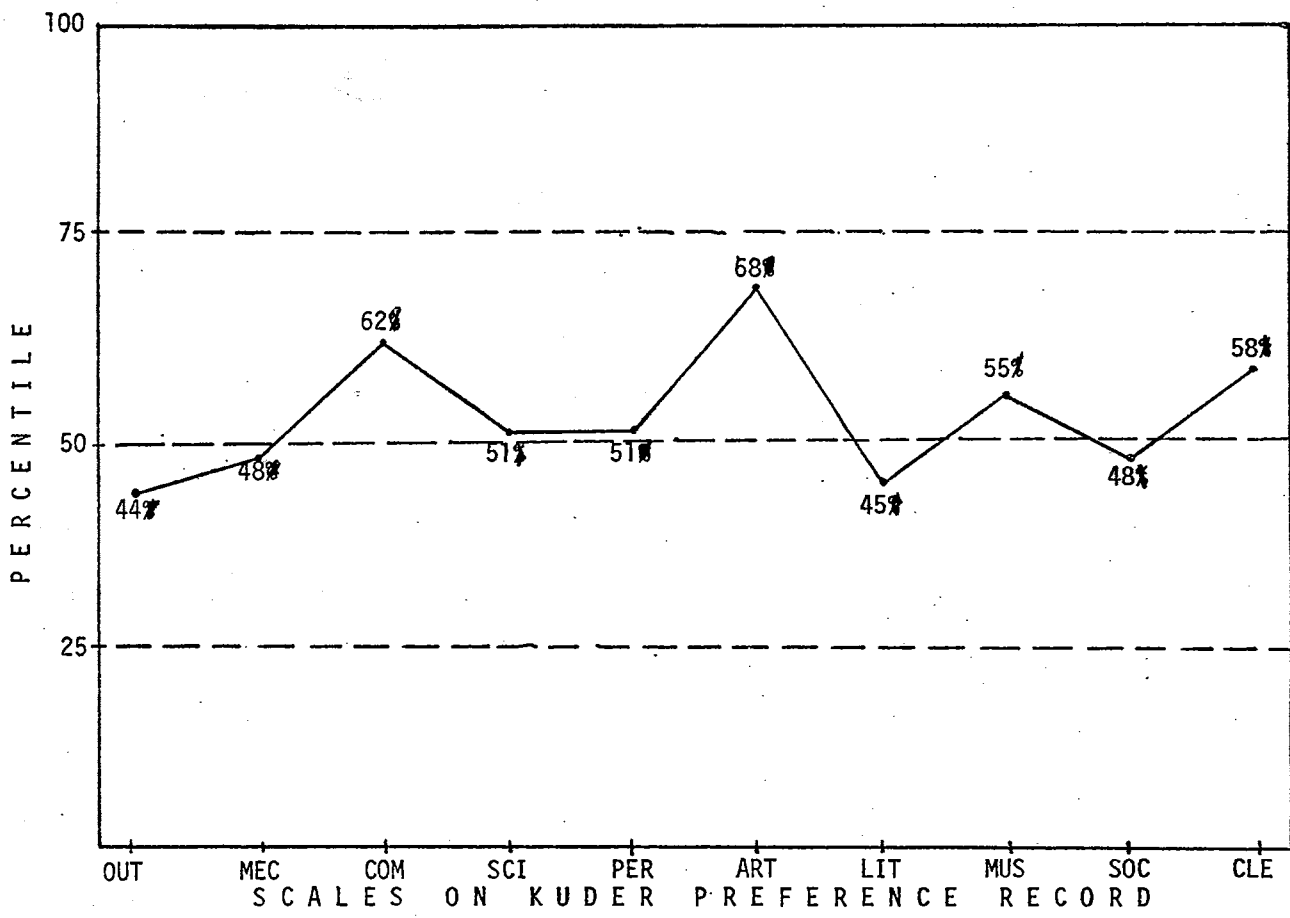


Figure 6. Comparison of Profile of Total Sample Group With Average Percentile Scores (50) for Norm Population on Interest Variables

TABLE X

RESULTS OF THE t-TEST FOR SIGNIFICANT DIFFERENCES BETWEEN TOTAL
 SAMPLE GROUP AND NORM GROUP ON THE SIX SCALES
 OF THE STUDY OF VALUES

Study of Values Scales	Mean Scores		t-Test
	Total Sample Group	Norm Group	
Theoretical	42.38	43.09	2.36*
Economic	42.77	42.05	2.03*
Aesthetic	37.36	36.72	1.93
Social	37.39	37.05	2.09*
Political	40.85	43.22	2.56*
Religious	38.31	37.88	1.70

*Significant at the .05 level of confidence; $t > 1.96$.

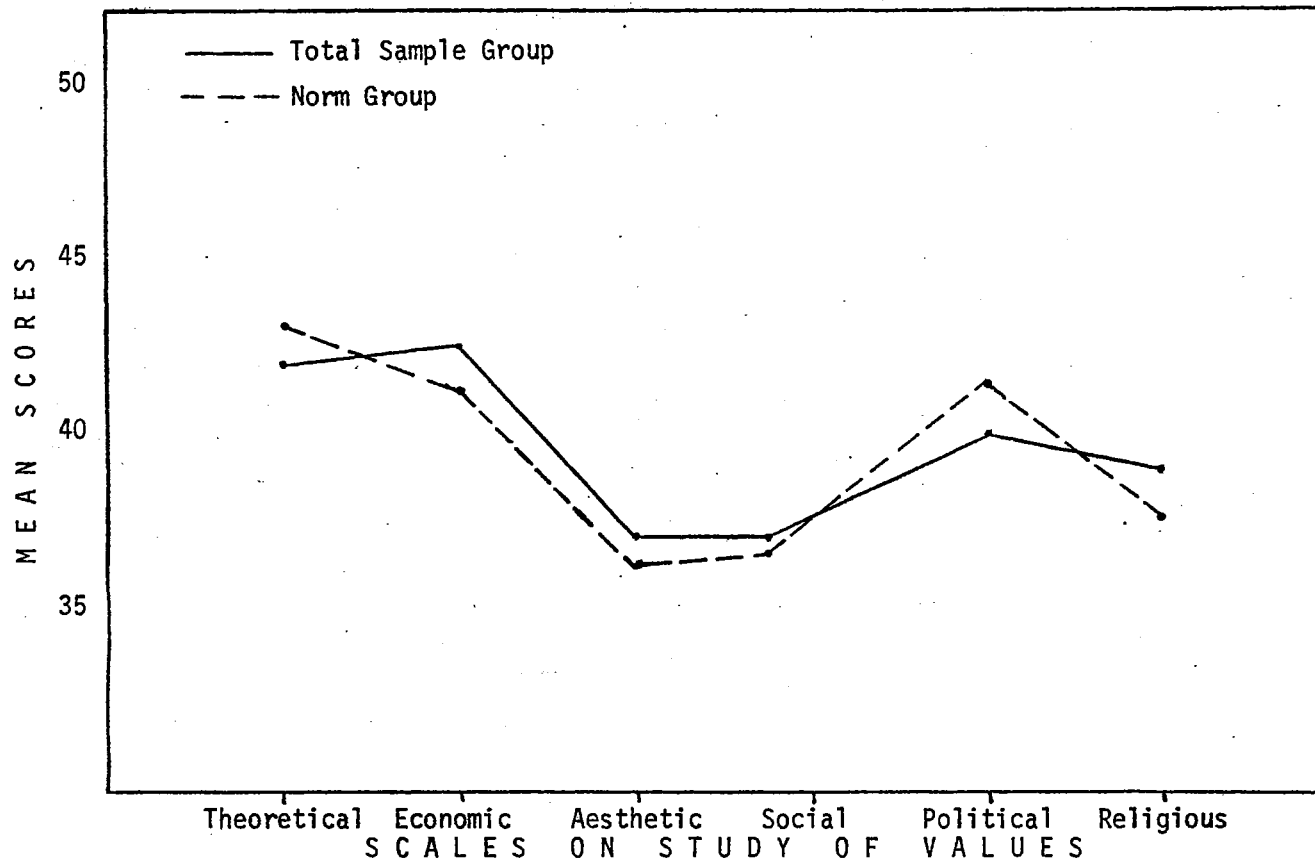


Figure 7. Comparison of Profile of Total Sample Group With Profile of Norm Group on Value Variables

CHAPTER V

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

In order to adequately evaluate the success of existing technical education programs, to make meaningful revisions within these programs, and to design effective new programs, counselors and administrators are very much in need of additional information concerning nonintellectual characteristics of students successful in these programs. It was, therefore, undertaken in this study to identify differences and/or similarities peculiar to successful technical students by examining the variables of personality, interests, values, and socioeconomic position. The specific research questions relative to this purpose were:

- (1) Are there any significant differences between (a) dropouts and persisting technical students, (b) entering freshmen and first-quarter second year students, (c) freshmen persistors and freshman dropouts, or (d) freshman persistors and first-quarter second year students when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?
- (2) Are there any significant differences or characteristic profiles exhibited among (a) entering freshmen, first-quarter second year students, dropouts, and persistors or (b) persisting freshmen, freshman dropouts, persisting

second year students, and second year dropouts when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

- (3) Is there a significant difference or characteristic profile exhibited when the total group is compared with the norm group on 31 scales measuring the variables of interests, values, personality, and socioeconomic position?

The sample group was composed of 209 students at the State Technical Institute at Memphis, Tennessee. The 137 freshmen and 72 first-quarter second year students were tested at the beginning of the 1971 fall quarter. Two quarters following the testing (March, 1972) it was found that 191 members of the original group tested remained in the program, while 18 had dropped out. A further breakdown revealed that 13 freshmen and five second year students had dropped out, leaving 124 freshmen and 67 second year students.

The four variables were measured by use of the following instruments: Omnibus Personality Inventory (14 scales measuring the personality variable); Kuder Preference Record (10 scales measuring the interests variable); Study of Values (six scales measuring the values variable); and Two Factor Index of Social Position (measuring the socioeconomic variable). Analysis of variance tests were conducted for the 31 scales yielded by these measures to determine significant differences among the groups as specified in the research questions. Profiles were drawn to determine if any characteristic differences existed among the groups or between the total group and the norm group. Findings and

conclusions drawn from these statistical analyses are presented in this chapter.

Significant Findings

Research Question One

Are there any significant differences between (a) dropouts and persisting technical students, (b) entering freshmen and first-quarter second year students, (c) freshman persistors and freshman dropouts, or (d) freshman persistors and first-quarter second year students when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

When an analysis of variance was conducted between dropouts and persisting students on the 31 selected scales, it was found that significant differences existed between the two groups on three personality variable scales (Theoretical Orientation, Impulse Expression, and Personal Integration) and on three interest scales (Mechanical, Scientific, and Musical). Higher mean scores for the persistors on Theoretical Orientation indicates a greater interest in scientific activities and higher mean scores on Personal Integration indicates few feelings of alienation. The dropouts had higher mean scores than the persistors on Impulse Expression, indicating a more active imagination. Persistors had higher mean scores than the dropouts on the Mechanical and Scientific scales, while dropouts had higher mean scores on the Musical scale.

The analysis of variance conducted between freshmen and second year students revealed significant differences on 20 of the 31 selected variables. Second year students had higher mean scores on Thinking Introversion (better liking for reflective thought and academic activities),

Theoretical Orientation (a greater interest in scientific activities), Complexity (a more flexible orientation), Autonomy (a more liberal way of thinking), Religious Orientation (a greater skepticism of religious beliefs), Altruism (a greater concern for and ethical attitude toward others), Masculinity-Femininity (indicating fewer problems of adjustment), and Response Bias (trying to make a better impression on the test). The one scale for which freshmen had a higher mean score than the second year students was Practical Outlook, indicating a greater interest in material possessions and concrete accomplishments.

For the scales used to measure the interests variable and which had significant differences, freshmen scored higher on the Persuasive, Artistic, and Clerical, while second year students scored higher on the Outdoor, Mechanical, and Scientific scales. The Theoretical, Aesthetic, Economic, and Social scales of the Study of Values showed significant differences, with the freshmen scoring higher on the Social and Aesthetic scales, indicating a more altruistic attitude toward man and a greater interest in artistic episodes of life, and the second year students scoring higher on Theoretical and Economic scales, both of which are defined as being in opposition to the Social and Aesthetic scales. This was the only comparison made in which a significant difference existed for socioeconomic position, with the freshmen scoring higher.

No significant differences were found between the mean scores of persisting freshmen and freshman dropouts. However, when persisting freshmen were compared with second year students, significant differences were found on 14 of the 31 selected scales. Second year students had higher mean scores on the significantly different scales of Theoretical Orientation, Complexity, Autonomy, Religious Orientation,

Thinking Introversion, and Masculinity-Femininity, with persisting freshmen having higher mean scores on Practical Outlook. On the significantly different scales measuring the interests variable, second year students scored higher on Scientific, Mechanical, and Outdoor, while persisting freshmen scored higher on Persuasive and Clerical. For the two significant difference value variable scales -- Theoretical and Economic -- second year students had the higher mean scores. As might be expected, these results tallied closely with the comparison of all freshmen to second year students, except that in the latter case the additional scales of Altruism and Response Bias were found to be significantly different.

Research Question Two

Are there any significant differences or characteristic profiles exhibited among (a) entering freshmen, first-quarter second year students, dropouts, and persistors or (b) persisting freshmen, freshman dropouts, persisting second year students, and second year dropouts when the scores of these groups on 31 scales measuring the variables of interests, values, personality, and socioeconomic position are compared?

Since the mean scores of the four groups in part (b) of this question showed a significant difference for only one scale (Anxiety Level), discussion of this research question will be directed to part (a).

Four personality variable scales were significantly different (Thinking Introversion, Theoretical Orientation, Complexity, Autonomy, and Masculinity-Femininity), although the profiles of the four groups followed each other fairly closely, except on one scale where the

dropouts scored exceedingly high (and out of line) on Impulse Expression, indicating greater overt actions.

Greater divergencies were noted for the interest variable when the profiles for the four groups were compared. Dropouts were quite low on the Mechanical and Scientific scales (compared to high scores by the second year students) and exceedingly higher on the Musical scale than the other three groups. Significant differences were found for the Outdoor, Mechanical, Scientific, Persuasive, and Clerical scales.

For the scales measuring the values variable, dropouts again had the most erratic profile of the four groups, scoring lower than the others on the Theoretical and Social scales and higher on the Political and Religious scales. Second year students, however, scored higher than the others on Theoretical and Economic scales, and lower on the Political, Aesthetic, and Religious scales. Freshmen appeared to have the least variation in their profile of the four groups.

When socioeconomic positions were compared for the four groups, no significant difference was found between the mean scores. Freshmen, persistors, and dropouts all were clearly in Class IV (upper-middle) and second year students were on the borderline between Class IV and Class III (middle).

Research Question Three

Is there a significant difference or characteristic profile exhibited when the total group is compared with the norm group on 31 scales measuring the variables of interests, values, personality, and socioeconomic position?

When the total sample group was tested against a norm group,

significant differences were found for 12 of the 14 scales measuring the personality variable. Of these 12 scales (Thinking Introversion, Theoretical Orientation, Aestheticism, Complexity, Autonomy, Religious Orientation, Social Extroversion, Altruism, Anxiety Level, Practical Outlook, Masculinity-Femininity, and Response Bias), the total group scored lower than the norm group on all but one -- Practical Outlook. The profile, however, showed that, with that one exception, both groups followed the same pattern.

In the case of the Kuder Preference Record, used to measure the interests variable, it was found that the profile for the total group hovered close to the mean percentile of 50, without any scores ranging above 75 per cent or below 25 per cent, indicating that the profile did not fit any specific occupational or interest profile. Significant differences were found between mean scores of the total and mean scores of a norm group on four of the six scales used to measure the values variable (Theoretical, Economic, Social, and Political), with the total sample group scoring higher on the Economic and Social scales and lower on the Theoretical and Political scales. The profiles for this variable, however, also showed the two groups following each other rather closely.

Conclusions

- (1) The freshmen in this study differed from the second year students on 20 of the 31 selected scales, including socio-economic position. On the personality and interests variables, second year students scored higher on those scales which indicated such characteristics as greater interest

in scientific methods, reflective thought, and academic activities, along with a more altruistic view of others and fewer problems of adjustment. These differences might be expected since the second year students had successfully completed one year of post-high school education and were probably more acclimated toward an academic atmosphere. This differentiation would, however, be a basis for adjusting the curriculum at the freshman level to better accommodate the transition which must be made between high school and the technical institute. Since the freshmen scored higher on socioeconomic position, this may be the cause for their higher scores on the Social and Aesthetic scales and for the second year students' higher consideration of Theoretical and Economic values. This latter conclusion could, however, also be the result of greater ambition arising from the completion of one successful year in the technical institute.

- (2) Dropouts had a more active imagination than persistors, as well as less interest in scientific activities and more feelings of alienation. They had low scores on the Mechanical and Scientific scales and high scores on the Musical scale. Dropouts displayed a slightly more extroverted personality, being more politically minded and more interested in artistic areas rather than scientific. These differences, however, were not great enough to use them as predictors of success or failure in a technical education program.

- (3) The total sample group did not display any characteristics which would significantly distinguish it from the norm groups on any of the four measured variables.
- (4) The scales measuring the personality variable and those measuring the interests variable revealed essentially the same information, indicating the possibility that the two measures could be used interchangeably to characterize technical students.
- (5) No significant differences between freshman dropouts and freshman persistors were found for any of the 31 selected scales, indicating that the nonintellectual scales used in this study should not be used to predict success or failure for prospective technical students in terms of personality, interests, values, or socioeconomic position.

Recommendations

- (1) The significant differences between freshman technical students and second year technical students identified in this study indicate that additional research is needed in this area to determine if the populations are different, if the students change over a period of one year, or if the difference is due to the students who drop out during that first year. It is recommended that a follow-up study be conducted using the freshman subjects in this study after they have reached the first quarter of their second year, comparing their scores at that time with scores made

as entering freshman and with the scores made by the second year students in this study.

- (2) Persisting freshman technical students at the participating institution and those freshman who dropped out had similar nonintellectual characteristics and the total group of dropouts had characteristics similar to persisting students. It is recommended that further investigation be made to determine why students dropped out and what they did after dropping out.
- (3) Freshman technical students in this study were found to be interested in social, clerical work, artistic work, and other occupations not directly related to the present curriculum. It is recommended that counseling methods, selection policies, and curriculum design be evaluated in keeping with student populations and needs.

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APPENDIX A

SAMPLE LETTER

Dear _____:

Research is vital to the continuing success of technical education. For successful research to be conducted, qualified individuals must accept a responsibility. This is why I am writing you.

I have informed the heads of the various departments of this school about a proposed study of our technical institute students. This study will be conducted by Fred J. Ingram of Oklahoma State University Graduate School. The purpose of this study is to improve our methods of helping students entering this school. Hopefully, all students will profit from the results of this study.

The study will involve some testing in the areas of personality, interest, and value variables. You will be asked to take some tests, which will take about two hours of your time. I will appreciate your cooperation.

Sincerely yours,

Charlie O. Whitehead, Director
State Technical Institute at Memphis

APPENDIX B

OMNIBUS PERSONALITY INVENTORY

THINKING INTROVERSION. Persons scoring high on this measure are characterized by a liking for reflective thought and academic activities. They express interests in a broad range of ideas found in a variety of areas, such as literature, art, and philosophy. Their thinking is less dominated by immediate conditions and situations, or by commonly accepted ideas, than that of thinking extroverts (low scorers). Most extroverts show a preference for overt action and tend to evaluate ideas on the basis of their practical, immediate application, or to entirely reject or avoid dealing with ideas and abstractions.

THEORETICAL ORIENTATION. This scale measures an interest in, or orientation to, a more restricted range of ideas than is true of Thinking Introversion. High scorers indicate a preference for dealing with theoretical concerns and problems and for using the scientific method in thinking; many are also exhibiting an interest in science and in scientific activities. High scorers are generally logical, analytical, and critical in their approach to problems and situations.

ESTHETICISM. High scorers endorse statements indicating diverse interests in artistic matters and activities and a high level of sensitivity and response to esthetic stimulation. The content of the statements in this scale extends beyond painting, sculpture, and music, and includes interests in literature and dramatics.

COMPLEXITY. This measure reflects an experimental and flexible orientation rather than a fixed way of viewing and organizing phenomena. High scorers are tolerant of ambiguities and uncertainties; they are fond of novel situations and ideas. Most persons high on this dimension prefer to deal with complexity, as opposed to simplicity, and very high scorers are disposed to seek out and to enjoy diversity and ambiguity.

AUTONOMY. The characteristic measured by this scale is composed of liberal, nonauthoritarian thinking and a need for independence. High scorers show a tendency to be independent of authority as traditionally imposed through social institutions. They oppose infringements on the rights of individuals and are tolerant of viewpoints other than their own; they tend to be

realistic, intellectually and politically liberal, and much less judgmental than low scorers.

RELIGIOUS ORIENTATION. High scorers are skeptical of conventional religious beliefs and practices and tend to reject most of them, especially those that are orthodox or fundamentalistic in nature. Persons scoring around the mean are manifesting a moderate view of religious beliefs and practices; low scorers are manifesting a strong commitment to Judaic-Christian beliefs and tend to be conservative in general and frequently rejecting of other viewpoints. The direction of scoring on this scale, with religious orientation indicated by low scores, was based chiefly on the correlation between these items and the first four scales, which measure a general intellectual disposition.

SOCIAL EXTROVERSION. This measure reflects a preferred style of relating to people in a social context. High scorers display a strong interest in being with people, and they seek social activities and gain satisfaction from them. The social introvert (low scorer) tends to withdraw from social contacts and responsibilities.

IMPULSE EXPRESSION. This scale assesses a general readiness to express impulses and to seek gratification either in conscious thought or in overt action. High scorers have an active imagination, value sensual reactions and feelings; very high scorers have frequent feelings of rebellion and aggression.

PERSONAL INTEGRATION. The high scorer admits to few attitudes and behaviors that characterize socially alienated or emotionally disturbed persons. Low scorers often intentionally avoid others, experiencing feelings of hostility and aggression along with feelings of isolation, loneliness, and rejection.

ANXIETY LEVEL. High scorers deny that they have feelings or symptoms of anxiety, and do not admit to being nervous or worried. Low scorers describe themselves as tense and high-strung. They may experience some difficulty in adjusting to their social environment and they tend to have a poor opinion of themselves. (Note the direction of scoring on this scale: a high score indicates a low anxiety level, and vice versa.)

ALTRUISM. The high scorer is an affiliative person and trusting and ethical in his relations with others. He has a strong concern for the feelings and welfare of people he meets. Low scorers tend not to consider the feelings and welfare of others and often view people from an impersonal, distant perspective.

PRACTICAL OUTLOOK. The high scorer on this measure is interested in practical, applied activities and tends to value material possessions and concrete accomplishments. The criterion most often used to evaluate ideas and things is one of immediate utility. Authoritarianism, conservatism, and

nonintellectual interests are very frequent personality components of persons scoring above the average.

MASCULINITY-FEMININITY. This scale assesses some of the differences in attitudes and interests between college men and women. High scorers (masculine) deny interests in esthetic matters, and they admit to few adjustment problems, feelings of anxiety, or personal inadequacies. They also tend to be somewhat less socially inclined than low scorers and more interested in scientific matters. Low scorers (feminine), besides having stronger esthetic and social inclinations, also admit to greater sensitivity and emotionality.

RESPONSE BIAS. This measure, composed chiefly of items seemingly unrelated to the concept, represents an approach to assessing the student's test-taking attitude. High scorers are responding in a manner similar to a group of students who were explicitly asked to make a good impression by their responses to these items. Low scorers, on the contrary, may be trying to make a bad impression or are indicating a low state of well-being or feelings of depression.

APPENDIX C

KUDER PREFERENCE RECORD

OUTDOOR interest means that you prefer work that keeps you outside most of the time and usually deals with animals and growing things. Forest rangers, naturalists, and farmers are among those high in outdoor interests.

MECHANICAL interest means you like to work with machines and tools. Jobs in this area include automobile repairmen, watchmakers, drill press operators, and engineers.

COMPUTATIONAL interest means you like to work with numbers. A high score in this area suggests that you might like such jobs as bookkeeper, accountant, or bank teller.

SCIENTIFIC interest means that you like to discover new facts and solve problems. Doctors, chemists, nurses, engineers, radio repairmen, aviators, and dieticians usually have high scientific interests.

PERSUASIVE interest means that you like to meet and deal with people and to promote projects or things to sell. Most actors, politicians, radio announcers, authors, salesmen, and store clerks have high persuasive interests.

ARTISTIC interest means you like to do creative work with your hands. It is usually work that has "eye appeal" involving attractive design, color, and materials. Painters, sculptors, architects, dress designers, hairdressers, and interior decorators all do "artistic" work.

LITERARY interest shows that you like to read and write. Literary jobs include novelist, historian, teacher, actor, news reporter, editor, drama critic, librarian, and book reviewer.

MUSICAL interest shows you like going to concerts, playing instruments, singing, or reading about music and musicians.

SOCIAL SERVICE interest indicates a preference for helping people. Nurses, Boy or Girl Scout leaders, vocational counselors, tutors, ministers, personnel workers, social workers, and hospital attendants spend much of their time helping other people.

CLERICAL interest means that you like office work that requires precision and accuracy. Jobs such as bookkeeper, accountant, file clerk, salesclerk, secretary, statistician, and traffic manager fall in this area. (Kuder, 1964).

APPENDIX D

STUDY OF VALUES

THEORETICAL. The dominant interest of the theoretical man is the discovery of truth. In the pursuit of this goal he characteristically takes a "cognitive" attitude, one that looks for identities and differences; one that divests itself of judgments regarding the beauty or utility of objects, and seeks only to observe and to reason. Since the interests of the theoretical man are empirical, critical, and rational, he is necessarily an intellectual, frequently a scientist or philosopher. His chief aim in life is to order and systematize his knowledge.

ECONOMIC. The economic man is characteristically interested in what is useful. Based originally upon the satisfaction of bodily needs (self-preservation), the interest in utilities develops to embrace the practical affairs of the business world--the production, marketing, and consumption of goods, the elaboration of credit, and the accumulation of tangible wealth. This type is thoroughly "practical" and conforms well to the prevailing stereotype of the average American businessman.

The economic attitude frequently comes into conflict with other values. The economic man wants education to be practical, and regards unapplied knowledge as waste. Great feats of engineering and application result from the demands economic men make upon science. The value of utility likewise conflicts with the aesthetic value, except when art serves commercial ends. In his personal life the economic man is likely to confuse luxury with beauty. In his relations with people he is more likely to be interested in surpassing them in wealth than in dominating them (political attitude) or in serving them (social attitude). In some cases the economic man may be said to make his religion the worship of Mammon. In other instances, however, he may have regard for the traditional God, but inclines to consider him as the giver of good gifts, of wealth, prosperity, and other tangible blessings.

AESTHETIC. The aesthetic man sees his highest value in form and harmony. Each single experience is judged from the standpoint of grace, symmetry, or fitness. He regards life as a procession of events; each single impression is enjoyed for its own sake. He need not be a creative artist, nor need he be effete; he is aesthetic if he but finds his chief interest in the artistic episodes of life.

The aesthetic attitude is, in a sense, diametrically opposed to the theoretical; the former is concerned with the diversity, and the latter with the identities of experience. The aesthetic man either chooses, with Keats, to consider truth as equivalent to beauty, or agrees with Mencken, that, "to make a thing charming is a million times more important than to make it true." In the economic sphere the aesthete sees the process of manufacturing, advertising, and trade as a wholesale destruction of values most important to him. In social affairs he may be said to be interested in persons but not in the welfare of persons; he tends toward individualism and self-sufficiency. Aesthetic people often like the beautiful insignia of pomp and power, but oppose political activity when it makes for the repression of individuality. In the field of religion they are likely to confuse beauty with purer religious experience.

SOCIAL. The highest value for this type is love of people. In the Study of Values it is the altruistic or philanthropic aspect of love that is measured. The social man prizes other persons as ends, and is therefore himself kind, sympathetic, and unselfish. He is likely to find the theoretical, economic, and aesthetic attitudes cold and inhuman. In contrast to the political type, the social man regards love as itself the only suitable form of human relationship. Spranger adds that in its purest form the social interest is selfless and tends to approach very closely to the religious attitude.

POLITICAL. The political man is interested primarily in power. His activities are not necessarily within the narrow field of politics, but whatever his vocation, he betrays himself as *Machtmensch*. Leaders in any field generally have high power value. Since competition and struggle play a large part in all life, many philosophers have seen power as the most universal and most fundamental of motives. There are, however, certain personalities in whom the desire for a direct expression of this motive is uppermost, who wish above all else for personal power, influence, and renown.

RELIGIOUS. The highest value of the religious man may be called unity. He is mystical, and seeks to comprehend the cosmos as a whole, to relate himself to its embracing totality. Spranger defines the religious man as one "whose mental structure is permanently directed to the creation of the highest and absolutely satisfying value experience." Some men of this type are "imminent mystics," that is, they find their religious experience in the affirmation of life and in active participation therein. A Faust with his zest and enthusiasm sees something divine in every event. The "transcendental mystic," on the other hand, seeks to unite himself with a higher reality by withdrawing from life; he is the ascetic, and, like the holy men of India, finds the experience of unity through self-denial and meditation. In many individuals the negation and affirmation of life alternate to yield the greatest satisfaction.

APPENDIX E

TWO FACTOR INDEX OF SOCIAL POSITION

The Two Factor Index of Social Position was developed to meet the need for an objective, easily applicable procedure to estimate the positions individuals occupy in the status structure of our society. Its development was dependent both upon detailed knowledge of the social structure, and procedures social scientists have used to delineate class position. It is premised upon three assumptions: (1) the existence of a status structure in the society; (2) positions in this structure are determined mainly by a few commonly accepted symbolic characteristics; and (3) the characteristics symbolic of status may be scaled and combined by the use of statistical procedures so that a researcher can quickly, reliably, and meaningfully stratify the population under study.

Occupation and education are the two factors utilized to determine social position. Occupation is presumed to reflect the skill and power individuals possess as they perform the many maintenance functions in the society. Education is believed to reflect not only knowledge, but also cultural tastes. The proper combination of these factors by the use of statistical techniques enable a researcher to determine within approximate limits the social position an individual occupies in the status structure of our society (Hollingshead, 1957).

INDEX OF SOCIAL POSITION SCORES

The Two Factor Index of Social Position Scores may be arranged on a continuum, or divided into groups of scores. The continuum of scores has been broken into a hierarchy of score groups. Hollingshead (1958) found the most meaningful breaks for the purpose of predicting the social class position of an individual or of a nuclear family to be as follows:

<u>Social Class</u>	<u>Range of Computed Scores</u>	<u>Social Levels</u>
I	11-17	Upper
II	18-27	Upper-Middle
III	28-43	Middle
IV	44-60	Lower-Middle
V	61-77	Lower

When the ISP is relied upon to determine class status, differences in individual scores within a specified range are ignored, and the scores within the range are treated as a unit. This procedure assumes there are meaningful differences between the score groups (Hollingshead, 1967).

VITA

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