SELF-CONCEPT CLARITY AND VOCATIONAL CHOICE IN FIRST YEAR COLLEGE MALES

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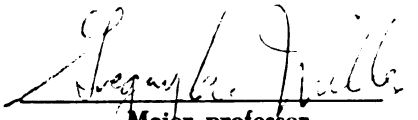

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ABSTRACT

SELF-CONCEPT CLARITY
AND VOCATIONAL CHOICE IN
FIRST YEAR COLLEGE MALES

by Michael A. Tucci

This investigation was designed to examine one of Super's propositions relative to the necessity for a clear self-concept for vocational choice. This was specifically examined by the following aspects:

(1) To determine whether or not significant differences exist between students who are definitely decided upon a vocational choice and students who are undecided about a vocational choice relative to self-knowledge of six different scholastic abilities generally associated with academic success.

(2) To determine whether or not significant differences exist between students who have tentatively decided upon a vocational choice relative to self-knowledge of six different scholastic abilities generally associated with acedemic success.

(3) To determine whether or not significant differences exist between students who have tentatively decided upon a vocational choice and students who are definitely decided upon a vocational choice.

To make these determinations, thirty-six hypotheses were advanced regarding differences between means and variances. The instruments used were a specially designed self-valuation questionnaire, the verbal and quantitative scores

from the College Placement Tests, the correctness of expression, social science, and natural science scores from the Iowa Tests of Educational Development, and the rate of reading score from the Diagnostic Reading Test.

Entering male college freshmen who had been admitted by certificate, i.e., admitted on the basis of superior high school marks and principal's recommendation, were used as subjects. There were 54 definitely decided students, 79 tentatively decided students, and 30 undecided students used.

The significance of the difference between means was tested by the "t" test. Variances were tested by the "F" or variance ratio.

In this study a person with a clear- self-concept is one whose self-estimates agree with his actual test scores. Definitely decided students exhibited clearer self-concepts than undecided students when quantitative ability was used as a criterion for determining clarity of self-concept. The undecided students displayed clearer self-concepts than the definitely decided group when natural science ability was used as a criterion for clarity of self-concept.

When tentatively decided students were compared with undecided students, no significant differences in the means were found.

Tentatively decided students manifested clearer self-concepts than the definitely decided group when a verbal

test was employed as a criterion for clarity of self-concept.

While not statistically significant and while no generalizable conclusion is warranted, the direction of the data indicated that the tentatively decided students were superior to the undecided students and the undecided students were superior to the definitely decided students in clarity of self-concept.

SELF-CONCEPT CLARITY AND VOCATIONAL CHOICE IN FIRST YEAR COLLEGE MALES

By

Michael A. Tucci

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CHAPTER I

THE NATURE AND IMPORTANCE OF THE PROBLEM

Introduction

The importance of the problem under consideration lies in testing the proposition of Super, namely, that an occupational decision is one of the points in life when a person is called upon to state his concept of himself, to say, "I am this or that kind of person." (49) That is to say, when a person can decide upon a vocational choice he can state his concept of himself. If a person does not have a clearly defined self-concept and is unable to state what it is, it follows logically from this framework that he can not make a vocational choice. Super has formulated this thought lucidly in his statement that

> . . . a well-formulated self-concept, . . . makes for an easier transition from school to work than does a hazy or unrealistic concept of the self. Here, then, is a major goal for education; the development of clear, well-formulated, and realistic self-concepts.

From the foregoing, one can see the logical deduction and rationale for the guiding, central hypothesis for this study which is that college men who can decide on a vocat- choice have relatively clearer self-concepts than do those college men who can not decide upon a vocational choice.

For purposes of this study it was decided that self-concept would be defined as ". . . an individual's evaluation of himself." This is the definition used by Tiedeman and O'Hara in their study entitled, "Vocational Self-Concept in Adolescence." (37) Using this definition, the

following areas were tested: verbal ability, quantitative ability, correctness of expression, social science ability, natural science ability, and speed of reading.

While there are no known psychometric instruments which measure the clarity of self-concept directly, it was felt that this, perhaps, could be measured indirectly. The approach decided upon was to ask the students in the study to give self-estimates of their abilities. Their self-estimates were then compared with their actual test scores for the factors on which they gave self-estimates. A high agreement between the self-estimate and the actual test score would mean clear self-understanding, i.e., a clear self-concept. A wide discrepancy between the self-estimate and the actual test score would mean poor self understanding, i.e., an unclear self-concept.

In summary, the nature of the problem is one of attempting to find out if men who can decide on a vocational choice have relatively clearer self-concepts than do those men who can not decide upon a vocational choice.

The Purpose and Importance of the Study

To examine the relationship of self-concept to vocational decision is the purpose of this study.

This is considered by the author to be important because of the dearth of research on this very point. While the clarity of self-concept is spoken of often in relationship to vocational choice, this particular segment of Super's general theory of vocational choice has been ex-

cluded from examination.

The importance of this kind of study is indicated by Roe when she states in her book, The Psychology of Occupation, under a chapter which reviews research performed on occupational choice:

> All this emphasizes the point that it is not enough to supply vocational information; self-understanding and self-acceptance are in fact rather more important. With these it is a relatively simple matter to obtain factual vocational information; without them all the information in the world is an inadequate guide (38)

To know by using scientific methodology if clarity of self-concept is crucial to vocational choice as Super states in this theory would add a valuable particle of information to the general field of guidance and counseling.

Historically, methods of vocational guidance have concentrated their efforts on aligning a person's interests with his aptitudes. The feeling throughout this period of development was that interests and aptitudes surely are important indices of vocational choice and the energies of the vocational guidance movement were addressed to these ends. Other researchers began to suspect that there were other factors which might prove to be just as important, if not more so, for vocational choice. With the suspicion that interests and aptitudes did not tell the complete vocational story for a particular person, several theories came to light. These theories dod not dispose of interest and aptitudes as powerful factors in vocational development but rather supplemented them by the theories proffered.

The specific discussion of these theories would be inappropriate to this study because of the focus placed upon Super"s proposition.

In addition, perhaps, to adding something to the body of knowledge which comprises the general field of guidance and counseling there are some practical considerations that are seen as important. The most important of these practical considerations could be an addition to methods employed in studying students. The guidance worker is interested in knowing more about his clients. Is the student's self-concept clarity a worthwhile area for exploration? Can knowledge of self really assist in vocational choice and satisfaction?

In summary, the importance of the study lies in testing the proposition of Super, namely, that an occupational decision is one of the points in life when a person is called upon to state his concept of himself, to say, "I am this or that kind of person." Further importance lies in hopefully adding to the body of knowledge which comprises the area of guidance and counseling. The major purpose of the study is to examine the relationship of self-concept to vocational choice.

The Problem

This study is concerned with the investigation of the relationship, if any, of the clarity of self-concept to vocational decision. The major instruments employed in the study are the verbal and quantitative scores derived from

administering the College Placement Test, published by Science Research Associates, the Iowa Tests of Educational Development which in this study included "The Correctness of Expression Test," "The Ability to Interpret Social Sciences Test," "The Ability to Interpret Natural Sciences Test," and "The Speed of Reading Test," from the Diagnostic Reading Test.

Specifically, this investigation was designed to attain the following objectives:

(1) To determine whether or not significant differences exist between vocationally decided students and vocationally undecided students relative to self-knowledge of six different abilities generally associated with academic success.

(2) To determine whether or not significant differences exist between students who had tentatively made a vocational choice and students who were undecided upon a vocational choice relative to self-knowledge of six different abilities generally associated with academic success.

Limitations and Scope of the Study

This study is limited to a population drawn from the entering Wayne State University freshmen who are scheduled to begin classes at the university in September, 1961. The students who comprise the study have been admitted by certificate, i.e., they possessed a B average or better in high school and were strongly recommended by their high school principals for university admission.

Administrative difficulties made it necessary to select one of five lists (which contained names and addresses of students who were admitted by certificate) at random rather than a true random sampling of the entire group. A true random sampling of all of the entering freshmen population would have given each entering male freshmen an equal chance of appearing in the study. However, the author of the study wanted as homogeneous a group as was possible so that the variable of vocational decision might be brought into sharper focus. That is to say, those students who were admitted by certificate appeared to have more in common than would a sample of the general entering freshmen male students.

In defense of this manner of sampling it is important to note that the certificate admissions appeared to have more in common than would a group of freshmen which contained both certificate admissions and admissions by examination. In the "admissions by examination" group there are students who, perhaps, did not value educational achievement in high school, or who were unmotivated in high school, or who were underachievers in high school. While these factors might be characteristic of a typical university, entering freshmen class, it was felt that the more homogeneous the group that could be obtained, the more in focus could be the variable of vocational decision. The administrative difficulties compounded and reinforced the decision to utilize the method of population selection that

was decided upon. (See "Selection of an Appropriate Sample" for more detailed information).

Two hundred and twenty-seven students were included in the mailing of the questionnaires. Of these 199 were returned. Of this number 36 were excluded. Five of the thirty-six were excluded because of failure to fill out the questionnaire properly and the remaining thirty-one were excluded because actual test scores were not available with which their self-estimates could be compared. With the exclusion of thirty-six subjects, the total number of subjects used in the study was reduced to 163.

Of the 163 students, 54 were definitely decided upon a vocation, 79 were tentatively decided upon a vocation, and 30 were undecided about a vocational choice.

Definition of Terms

Self-Concept

For the purposes of this study, the general meaning of self-concept is based upon the following statement by O'Hara and Tiedeman: ". . . we have defined self-concept as an individual's evaluation of himself." (37)

Clear Self-Concept

If a person's self-estimate of a particular variable agrees with his test score for the particular variable in question, this person has a high degree of self-knowledge, i.e., a relatively clear self-concept. A person with a high discrepancy between self-estimate and actual score

will be a person who does not have a clear self-concept.

A Vocationally Undecided Person

For purposes of this study, a vocationally undecided person will be one who checks as descriptive of himself one of the following two statements:

(1) I am completely undecided on an occupational goal and no definite decision is possible at this time. (By occupational goal, we mean specific job titles such as accountant, physician, et al.)

(2) I am considering many possible occupational goals but can't decide on any particular two or three.

A Tentatively Decided Person

A tentatively decided person, for purposes of this study, will be a person who checks as descriptive of himself the statement: "I have made a tentative decision on one occupational goal which is _____."

A Definitely Decided Person

A definitely decided person, for purposes of this study will be a person who checks as descriptive of himself the statement: "I have made a definite decision on one occupational goal which is _____."

Occupational or Vocational Choice

The words, "occupational choice" and "vocational choice" will be used interchangeably throughout this study. An occupational choice will be the way by which a person hopes to earn his living.

Population

The population will be 163 Wayne State University entering freshmen who have been admitted by certificate. These 163 males are scheduled to begin classes at Wayne State University in September, 1961.

Self-Estimate Questionnaire

The questionnaire in this study is an instrument especially designed to elicit self-estimates of scholastic abilities from the population. Other aspects of self-knowledge are queried. (See Appendix A.)

Organization of the Study

Chapter I contains the statement of the problem, its significance and importance and relevant definitions.

Chapter II presents a review of significant literature related to the problem under consideration. Wherever possible, certain critiques have been presented when the author felt such critiques would aid in clarifying his procedures.

Chapter III presents the statistical design of the study which encompasses appropriateness of methods employed, instrumentation, specification of the population, characteristics of the sample, sampling, replication, levels of significance, and data collection.

Chapter IV presents the analysis of the data describing such things as the appropriateness of the criteria of evaluation and its relevance to the objectives of the study, statistical assumptions, and the discussion of hypotheses.

Chapter V summarizes the findings and presents conclu-

sions with the results obtained and notes on generalizations will be discussed under this chapter.

CHAPTER II

REVIEW OF SIGNIFICANT LITERATURE

The central hypotheses for this study grew logically from Super's theory of vocational choice. It is relevant, therefore, to point out certain features of his theory which are related to this study. Super believes that intelligence, aptitudes, and interests, understood and taken into account in job-seeking and placement, lead to getting more satisfying jobs than do these same factors, not understood and neglected. In the following quota he decisively spells out the importance of a clear self-concept for vocational choice.

> In other words, a well-formulated self-concept, which takes into account the realities of the working world, makes for an easier transition from school to work than does a hazy or unrealistic concept of the self. Here, then, is a major goal for education: the devlopment of clear, well-formulated, and realistic self-concepts. (49)

Self Concept

In a comprehensive review and analysis of self-concept literature, Ruth Wylie has described the present author's operational definition as self-concept insight. She agrees that it is very difficult to make the term, "self-concept," operational but that, in general, most operational definitions of insight which have been used in the literature involve the use of discrepancy scores gathered from comparing the subject's self-estimates with his actual test

scores. So far as the subject is concerned, he may tell how he privately sees himself with respect to characteristics which can be measured relatively objectively, e.g., intelligence, or with respect to feelings and behaviors less objectively measurable. (56)

For Rogers, self-concept,

> . . . may be thought of as an organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perceptions of one's characteristics and abilities; the percepts and concepts of the self in relation to others and to the environment; the value qualities which are perceived as having positive or negative valence. (39)

For Snygg and Combs, self-concept is, "those parts of the phenomenal field which the individual has differentiated as definite and fairly stable characteristics of himself." (44)

Because of the nature of the definitions of self-concept, most of the literature dealing with it emphasize a study of the personality traits rather than intellectual functioning. There is a voluminous amount of research on self vs. ideal self, social self, etc., all emphasizing personality attributes. This literature is seen as unrelated to the problems emanating from an examination of self in relation to scholastic abilities.

In a similar vein, Erik Erikson alludes to self-concept and its relation to vocational choice but uses a somewhat different terminology. In speaking of adolescents, he states that the danger of this stage is role diffusion (hazy self-concept). He goes on to say that "Developing youths are

primarily concerned with the question of how to connect the roles and skills cultivated earlier with the occupational prototypes of the day." Just how serious Erikson believes role diffusion to be is accented when he states that, "It is primarily the inability to settle on an occupational identity which disturbs young people." (20)

Bordin attaches a great deal of importance to self-concept for vocational choice. He believes that when a person fills out an interest test, the person expresses his self-concept in terms of occupational stereotypes. Bordin notes that the emerging pattern of interests varies with the degree to which the subject accepts an occupational stereotype as self-descriptive and with his knowledge of the true occupational stereotype. (5) Interest test patterns, therefore, will change when the self-concept changes or when there is a change in knowledge of the occupational stereotype.

Anna Roe also has dealt with the importance of the self-concept for occupational choice. In discussing a theoretical society in terms of Utopia she states that in this imaginary, ideal society, before an individual would make a vocational choice, he would know himself, and that the process of growing up would include a full, conscious awareness of the self. He would develop a self-concept in accord with reality and this self-concept would be both known and acceptable to him. (38) Roe, therefore, feels self-knowledge to be of extreme importance for vocational

choice. She states:

> All this emphasized the point that it is not enough to supply vocational information; self-understanding and self-acceptance are in fact more important.
>
> With self-understanding and self-acceptance it is a relatively simple matter to obtain factual vocational information; without them all the information in the world is an inadequate guide. (38)

Ginzburg alludes to the importance of a clear self- concept for making vocational choices when he states that the adolescent is "tempted to consider his choice tentative for a longer time than is justified in terms of his opportunity for training." Further,

> This is grounded in an awareness that he really does not know enough about himself or about the world, or about the role that he would like to play in the future, to make a definitive commitment. It is therefore not easy for him to stop considering the problem in terms of a tentative choice. This period can com to an end only when the individual reaches the conclusion that he finally has a clear insight into himself . . . (24)

One of the groups used in the present study is described as tentatively decided. This particular group was examined because of the emphasis placed upon this stage of development by Ginzburg. He says that boys pass through stages of vocational development that are described within rather regular age limits; ages seventeen to eighteen are seen as falling within the tentative decision stage. He implies that it would be more "normal" to be tentatively decided between ages seventeen to eighteen than definitely decided or undecided.

In testing whether or not counseling increased the "realism" of the self-concept, Berdie, in 1954, employed self-estimates and actual test scores. Berdie's experimental subjects received vocational and educational counseling while the control group did not. The control group was comparable to the experimental group on scholastic abilities and personality traits as measured by the MMPI. After the experimental group received counseling regarding interests, probable college achievement, aptitudes, and personality characteristics, no differences were found between them and the control group in accuracy of judging aptitude (as measured by the A.C.E.) or personality characteristics (as measured by the MMPI). It is obvious that Berdie's study was concerned with changes due to counseling and not self-concept related to vocational choice, per se. (4) As is evident, self-concept was not examined in relation to vocational choice.

Johnson employed the use of self-estimates and actual test scores in 1953, again attempting to evaluate counseling relative to self-knowledge. He wanted to see if self-evaluations changed in the direction of greater accuracy once test scores had been revealed to the client. To do this he first asked each client to give a self-estimate of ability, interests, and personality variables. Then these same clients were given tests to obtain actual test scores which, subsequently were explained to them. Later, the subjects again gave self-estimates for the three vari-

ables. It was found that accuracy of estimates and self-knowledge of intelligence and interests increased significantly. (27) Here, it is evident that this study is only relevant because self-estimates and actual test scores were employed. Again, it is seen that Johnson did not examine self-concept in relation to vocational choice, but rather examined the effects of counseling.

Arsenian studied 125 male college freshmen in 1942, in which he compared self-estimates of abilities with actual test scores. Fifteen students estimated their standing accurately on all tests. Thirteen over- or under- estimated their standing by twenty-five percentile points on five tests. He concluded that, "Students who grossly over or underestimate their abilities . . . are as a group somewhat less intelligent and less well-adjusted." Ruth Wylie, criticizing this study stated that,

> His methods do not warrant such a conclusion because (1) none of the obtained differences was reported as being statistically significant; (2) there was contamination between the dependent and independent variables; (3) accurate subjects were not matched with inaccurate subjects with respect to self-estimates.

This study may have some relevance methodologically, but does not have relevance in relation to self-concept and vocational choice. (3)

Torrance, using eight subscores from academic aptitude tests, reports "little relationship between self-estimates and achieved standing among 1215 entering college freshmen." (53) The correlation method was employed which has

been shown by Singer and Stefflre to be inadequate in the analysis of self-estimates vs. actual test scores data. (43)

Proving of some interest and relevance, methodologically, are the studies by Brinn, 1956, Coffee, 1957, and Matteson, 1956, in which they utilize a comparison of self-estimates with actual test scores. (7, 14, 33) The conclusion from these three studies is that self-estimates of aptitudes are only moderately related to actual test scores. They did not anchor their studies to vocational decision. They were primarily interested in finding out how much self-knowledge was possessed by students, in general, when self-estimates were compared with actual test scores.

Gilinsky used self-estimates and compared them with actual test scores with the idea of examining level of aspiration. (23) This study, too, is only significant from a methodological standpoint.

Closely connected to this study, and, perhaps, illuminating is the O'Hara and Tiedeman study referred to in the section on "Operational Definitions." (37) They have examined clarity of self-concept by the use of self-estimates and actual test scores with a sample of 1021 high school boys. However, the focus of this study was not on vocational choice. They were concerned with the apparent stages that students go through in the clarification of the self-concept. For O'Hara and Tiedeman, self-concept was defined as "an individual's evaluation of himself.' Their data

indicates increasing clarification of self-concepts in four vocationally relevant areas. The vocationally relevant areas, here referred to, are aptitudes, interests, general values, and work values. By comparing self-estimates with actual test scores and by examining discrepancies obtained, they found stages of clarification in the self-concept that increased progressively from the freshman year through and including the senior year. In general, their results indicate that seniors in high school understand or know themselves better than juniors, juniors better than sophomores, and sophomores better than freshmen. They did not tie their study to vocational decision. They in fact excluded vocational decision in relation to clarity of self-concept and worked more intensively at examining some of Ginzburg's propositions.

In examining studies of self-estimates vs. actual test scores as a method of examining self-concept, one thing stands out clearly, There are no studies in the experimental literature which examine self-concept in relation to vocational choice. This, of course, was one of the many reasons that the author felt an examination of a possible relationship in this direction might be of some value.

Stages and Importance of Vocational Choice.

Ginzberg has noted that the process of occupational decision-making can be divided into three distinct periods: the period during which the individual makes what is called a fantasy choice; the period during which the individual

makes a tentative choice; and the period in which the person allegedly makes a realistic choice. Fantasy choices are typically made, he feels, between the ages of six and eleven. Tentative choices are typically made between the ages of eleven to eighteen or nineteen. Realistic choices are not spoken of in terms of age but rather in terms of emotional growth.

The tentative choice period is divided into four stages: the interest stage, the capacity stage, the value stage, and the transition stage. The interest stage, chronologically, ocurrs between ages eleven to twelve. The dominant feature of this stage is interest, i.e., the child verbalizes vocational choice in terms of the things he likes and dislikes in terms of what he is interested.in.

The capacity stage, from thirteen to fourteen, is characterized by concern for abilities to pursue a particular vocation, the various jobs open in it, its rewards and qualifications and training for the different jobs available.

The value stage, from fifteen to sixteen inclusive, is characterized by evaluations which the child makes concerning his goals in light of his interests, capacities, and values.

The final stage in the period of tentative choice ocurrs, Ginzberg states, usually at age seventeen and has been labeled the stage of transition. It is called transition because the young person is said to be in a state of transition. He graduates from high school and either works,

goes into the service, or goes to college.

If development has progressed normally the individual moves into the realistic stage. The period of realistic choices is divided by Ginzberg into three distinct stages. They are:

1. Exploration
2. Crystallization
3. Specification

Exploration is seen by Ginzberg as being

> the stage during which the new college student tries to acquire the experience which he needs to resolve his occupational choice. He hopes to gain this experience by exploring various subjects of study; by engaging in discussions with informed person-- teachers and advisors; by attending conferences and otherwise obtaining information about various fields of knowledge and the vocations.

Crystallization covers the time when the individual is able to assess the multitude of factors influencing the occupational choice which he has had under consideration and is finally able to commit himself.

Specification involves choosing a specific job from highly similar alternatives. In the crystallization stage the individual may have decided to become a college teacher but was not sure which subject he wanted to teach.

Special attention is paid to Ginzberg's theory because of emphasis placed upon the tentative stage and its corresponding ages in this study. Also in this study tentative choice of vocation is examined in relation to the ages of the subjects and in relation to the length of the subject's vocational decision.

Ginzberg's considerations and propositions provide a specific background for the construction of the self-valuation questionnaire and provide a general background for the importance of vocational choice in the life of the individual, which discussion now follows.

Importance of Vocational Choice

Most of man's needs are satisfied in this society either directly or indirectly by the vocation which he eventually may choose. Because the choice of a vocation possesses such manifold possibilities, of satisfaction for any given person, it is one of the most momentous of life's decisions; life style, associations, social level, economic class--all are profoundly affected by the vocation selected.

Roe has dealt with occupational choice in relation to the prepotency hierarchy of needs presented by Maslow. The basic needs according to Maslow are:

1. The physiological needs
2. The safety needs
3. The need for belongingness and love.
4. The need for importance, respect, self-esteem, and independence
5. The need for information
6. The need for understanding
7. The need for beauty
8. The need for self-actualization

This arrangement follows an order of prepotency, that is, if the first need is not satisfied, the individual is not concerned about the second, and if the second need is not satisfied, he is not concerned about the third, and so on. The hierarchy also indicates that the first need is the strongest, the second not so strong, and so on until number

eight is reached.

Roe feels that there is no single situation in our society which is potentially so capable of giving some satisfaction at all levels of basic needs as is the occupation. In our society one typically obtains food, drink, shelter, and clothing through the use of money which in most cases is obtained by the job performed. The need for belongingness and love may be partially satisfied in ones occupation. The worker may achieve a sense of worth on his job which he may not experience in any other area of his life. He may feel that the work situation is the only place in society where he really belongs.

If a sound vocational choice is made, the need for feeling importance, respect, and self-esteem may be partially fulfilled. An occupation may further provide a feeling of independence which would not be possible if the individual were unemployed. Information and curiosity needs may be satisfied as a result of constant questions that can arise on any job. To feel that one is superior to the problem at hand, and that one possesses sufficient knowledge with which to master one's environment can be highly satisfying.

The remaining needs are difficult to relate to occupations, and await further research. However, we may speculate that self-actualization to a large degree may be satisfied in the vocation one chooses. If one's resources, values, and personality are involved in the choice of a vocation (and we assume they are), then it is possible to say that the choice of a vocation may provide the opportu-

nity for self-actualization in large measure.

Leavitt, speculating on why people work, asserts that direct questioning of a random portion of the American population as to why they work would include such answers as these:

I work for status and recognition

I work to belong; to be part of a group

I work to get to the top

I work for knowledge

I work for security

I work for the feeling of accomplishment I get from a job well done

While many of these imaginary responses would be specific to the American culture, some would be true of other lands and other cultures. The responses, which really illustrate certain needs described by Maslow, underline the importance of a sound vocational choice.

There exist today societies where vocational choice is not a hurdle to cross simply because in these societies vocational choice does not exist. In these societies division of labor is based on sex, local resources, and/or tradition, with no departure from the established norms. Work activities can range from the most primitive direct provision for the basic material needs of the family to rigid adherence to the father's occupation.

Vocational choice may not exist in certain totalitarian societies where the state dictates how one's abilities will be utilized. In such situations self-determination

is virtually impossible. However, in the complex political and social system of a free economy vocational choice looms as one of the few important decisions that one is called upon to make.

The complexity of a large technical-industrial society compound the difficulties encountered in making a vocational choice. The Dictionary of Occupational Titles, lists over 40,000 different occupational titles which in itself is an awe-inspiring figure for one who is moving toward making a vocational choice. Out of this bewildering array, order must emerge. The individual must eventually focus on a specific job which may affect the larger portion of his life.

The above material has attempted to present reasons why vocational choice appears to be so highly important in this society. The following material is directed to looking at what types of individuals make vocational choices and what types of individuals do not. Our energies and our attention now turn to these considerations.

CHAPTER III

METHODOLOGY

Chapters I and II have been concerned with the purpose and statement of the problem, the limitations and organization of the study and a review of the significant literature. In the present chapter, the emphasis is upon the methodology and procedures involved in the gathering and analysis of the data upon which this study is based.

This study was designed to examine the following:

(1) To determine whether or not significant differences exist between vocationally decided students and vocationally undecided students relative to self-knowledge of six different abilities generally associated with academic success.

(2) To determine whether or not significant differences exist between students who have made a tentative vocational decision and students who are vocationally undecided relative to self-knowledge of six different abilities generally associated with academic success.

Among the many problems faced in the completion of the study were the following: (1) obtaining actual test scores for the subjects included in the study; (2) the construction of a self-valuation questionnaire; (3) the selection of an appropriate sample of the student population; and (4) the formulation and organization of methods of tabulating and analyzing the results.

For the 163 subjects used in the study there were

self-estimates obtained on the six variables. The subjects gave their self-estimates in percentiles which were then converted into the equivalent raw scores by reference to the publisher's manual. Actual raw test scores were obtained by the administration of the six tests described under "Instruments Used." The algebraic difference was computed taking into account both direction and distance. If the subject over-estimated his actual test score he was given a positive discrepancy score. If the subject under-estimated his actual test score he was given a negative discrepancy score. In either case, the discrepancy score was the number of points between the self-estimate and the actual test score.

The Instruments Used to Obtain Actual Test Scores

The College Placement Test (C.P.T.), published by Science Research Associates was employed to obtain a verbal and quantitative score for each student. The C.P.T. is a power test of scholastic ability providing three scores: verbal, quantitative and total. For purposes of this study only the verbal (V) and quantitative (Q) scores were used.

There are four item types included in the C.P.T. These are verbal relations, paragraph comprehension, data interpretation, and arithmetic reasoning. The reliabilities of these four sub-scores range from .73 to .89. Verbal relations and paragraph comprehension are combined to form the "Verbal Score." Data interpretation and arithmetic

reasoning are combined to form the "Quantitative Score."

Gustav Froehlich, writing in The Fifth Mental Measurements Yearbook states that "the predictive validity of the test is as good as, or better than, most other currently available single predictive indices of overall academic success in college." (10) On the negative side, he believes that further studies on predictive validities for a large number of schools are in order. At the same time, additional studies to determine the predictive efficiency of C.P.T. when used in combination with high school rank should be made. Further, Froehlich feels that the validity of the V and Q scores as predicted indices for specific curricular areas should be additionally explored.

Tiedeman cautions that Q is more oriented by the data interpretation subtest than by the arithmetic reasoning subtest and that V is more oriented by paragraph comprehension than are verbal relations. (10) He feels, however, that since the V and Q scores of the test are of "seeming relevance for study in college, the test is likely to have at least some predictive validity in most colleges, as is suggested by the several predictive validity studies already reported".

In general, there were no serious precluding factors revealed in the critical review of the C.P.T.

The Iowa Tests of Educational Development

The I.T.E.D. consist of nine broad measures of educational growth:

1. Understanding of Basic Social Concepts.
2. General Background in Natural Sciences.
3. Correctness and Appropriateness of Expression.
4. Ability to do Quantitative Thinking.
5. Ability to Interpret Reading Materials in the Social Studies.
6. Ability to Interpret Reading Materials in the Natural Sciences.
7. Ability to Interpret Literary Materials.
8. General Vocabulary.
9. Use of Sources of Information.

Of the above nine tests, three were used in this study to obtain actual test scores. These were Test 3, Correctness and Appropriateness of Expression; Test 5, Ability to Interpret Social Studies, and Test 6, Ability to Interpret Natural Sciences.

Reliability

Reliabilities reported in the test manual for the tests employed in this study are reported below.

Test 3 -- Correctness of Expression	.94
Test 5 -- Social Studies	.90
Test 6 -- Natural Sciences	.90

Validity

Evidence of validity is given in the manual in terms of a composite score, i.e., the total score for all nine Iowa tests. In fourteen validity studies reported, utilizing the composite score and correlating it with freshmen grade-point averages the validity coefficients range from a low of

.47 to a high of .72. On this point, Anastasi states that "the reported reliabilities are adequate, but objective evidence of validity is meager."

For the Iowa Tests of Educational Development, national norms are claimed but original normative data was obtained by administering the tests to a group of 30,000 graduating seniors, selected by the armed forces as a national stratified sample. Gardner states that "if national norms are claimed, it would seem preferable that results obtained from a large representative national sample be used."

On the more positive side, Gardner also feels that "from the point of view of the technical aspects of test construction, the Iowa Tests of Educational Development constitute an excellent battery." He believes that the format, directions, scaling and item construction are well done. In conclusion, he states "As measures of certain broad aspects of the pupil's educational development they are definitely superior tests."

The Diagnostic Reading Test: Rate of Reading

The third instrument employed to obtain actual test scores was the Rate of Reading sub-test of the Diagnostic Reading Test. The purpose of this section of the test is to measure the student's usual rate of reading interesting story-type material with a generally simple vocabulary load. It also measures the extent to which he comprehends what he reads at the rate achieved on this test. However, the com-

prehension score was not used in this study. The rate of reading score was used without consideration for the level of comprehension.

Reliability and Validity

Test-retest reliabilities for the rate of reading score is .80 to above. In commenting on these reading tests, Anastasi has noted that "their development represents an extensive amount of research by a group of specialists on the measurement and teaching of reading." (2)

Summary

Parts of three tests were used to obtain actual test scores: The College Placement Test, The Iowa Tests of Educational Development, and The Diagnostic Reading Test. The following chart indicates the parts of the above tests that were employed for this study.

Name of Variable Used in Study	Source
Verbal	College Placement Test
Quantitative	College Placement Test
Correctness of Expression	Iowa Tests of Educational Development
Social Sciences	Iowa Tests of Educational Development
Natural Sciences	Iowa Tests of Educational Development
Rate of Reading	Diagnostic Reading Tests

The Self-Valuation Questionnaire

Johnson has stated that questionnaire studies in which the sample selects itself, voluntary replies to requests for opinions on some controversial issue, and letters written

to editors of newspapers-- are likely to represent mainly persons who have strong views on the issues one way or another. (28)

It should be noted, however, that of 227 questionnaires mailed out, 199 were returned. A possible explanation lies in the fact that the questionnaire was printed with an official university letterhead and instructions were stated in an authoritarian manner. Possibly because the students in the study were incoming university freshmen and were somewhat overwhelmed by this feeling, the questionnaire returns were quite high.

The questionnaire, a copy of which is in Appendix (A) was designed to obtain information useful in the testing of the various hypotheses stated in Chapter I. It was finally assembled in light of suggestions offered by members of the author's advisory committee.

The reliability and validity of the questionnaire was not tested by statistical procedures, but was accepted on an empirically observable basis. The questions that were used were those that could test the various hypotheses central to the study.

The first part of the questionnaire asks the student to describe himself as being undecided, tentatively decided, or definitely decided relative to vocational choice. The second part of the questionnaire asks the student to estimate what he thinks his score would be on six different scholastic ability tests. He is asked to compare himself with other incoming Wayne State University freshmen by

writing in a percentile indicating his estimate of his abilities. These percentiles were then converted into equivalent raw scores.

The Selection of An Appropriate Sample of the Student Population

The 163 male, high school graduates used for this study had all been accepted at Wayne State University by certificate, that is, they were admitted to the university without entrance examinations. When a student's marks in high school are high, i.e., B or better, and he has been recommended by his principal, he is admitted to the university by a process called: "Admission by Certificate." The students comprising this study all planned to begin their university studies in September, 1961. Of the 163 students included in the study all except five graduated from high school in June, 1961.

It was felt that a more homogeneous group would be obtainable by examining those students who were admitted by certificate for this would mean that they all had several factors in common. They all had B or better averages throughout their high school years. They were all males. They all came from inside Detroit or a suburb of Detroit. They were all recommended for admission by their high school principals. They were all admitted without taking entrance tests. It should be noted at the outset that the level of generalization of the results will of necessity be somewhat constricted since total admissions by certificate do

do not characterize a typical entering freshmen class.

The Wayne State University Admissions Office had made up lists of those students who were admitted by certificate. One of their lists was chosen randomly and was used as the basic list from which the subjects for the study were obtained. A true random sampling of the entering freshmen population would have enabled each student to have had an equal chance of appearing in the study. For various administrative reasons, this was not possible. The primary objective was to focus attention on vocational decision while at the same time accumulate a group of students who might be very similar except for the variable of vocational decision. In selecting the certificate admissions there were many factors which were patently common to all the subjects as has been explained above.

It was administratively impossible to distribute the questionnaires to the students in person. A direct mail approach was employed. The list of certificate admissions contained home addresses to which the specially designed questionnaire was mailed. A copy of the questionnaire may be found in Appendix A.

Table I, which follows, illustrates the type of questionnaires that were returned, the number, and the corresponding type of vocational choice indicated on the questionnaire.

TABLE I

QUESTIONNAIRE RETURNS AND TYPE OF VOCATIONAL CHOICE

Description	Number	Used in Study
Total sent out	227	
Total returned	199	163
Total Tentatively Decided returned	91	79
Total Definitely Decided returned	71	54
Total Undecided returned	37	30

The number of questionnaires returned and the number of questionnaires used in the study differ because thirty-six of the questionnaires returned were not filled out correctly. All of the thirty-six that were rejected had the same error: instead of giving separate scores, the subjects gave a range of scores. That is, instead of writing in a self-rating composed of a percentile such as 80, the rejected subjects wrote in a range such as 50 to 80. Of the twenty-eight who did not return questionnaires, six had entered the armed services and five had decided to go to a college other than Wayne State University.

Of the seventeen remaining who did not return questionnaires, information was obtained regarding their vocational choice by personal interview or telephone communication. Of these seventeen, ten were tentatively decided, six were definitely decided, and one was undecided.

Formulation and Organization of Methods for Tabulating and Analyzing the Results

Statistical Assumptions

Certain statistical assumptions were made for the purposes of this study. It is assumed that the sample possesses randomness. It is also assumed that actual test scores and self-estimates are normally distributed.

To test the significance of the difference between the means the "t" test was employed. However, it has been shown by Singer and Stefflre that this procedure alone is not sufficient to make meaningful interpretation of the data possible. (43) Only additional tests of significance of the differences between the standard deviations can make possible a meaningful interpretation of the data. A similar method which yields similar results has been suggested by G. Snedecor who states that it is less laborious computationally to square the standard deviations, thus obtaining variances, and testing the differences between the variances. This is known as the "F" or variance ratio. Snedecor defines it as $F = \frac{S_1^2}{S_2^2}$. (34)

McNemar, commenting on the use of the F ratio states:

> If one wishes to judge whether 2 samples, either large or small, yield a difference in variability which is large enough to warrant concluding that the 2 population variabilities differ, he sets up the null hypothesis that no difference exists in the 2 population variances. Then instead of dealing as usual with the difference between the 2 estimates, he takes their ratio. (34)

CHAPTER IV

ANALYSIS OF THE DATA

The tenability of various hypotheses concerning the relationship of self-concept and vocational decision was examined in this study. Each of these hypotheses was examined with statistical techniques which would provide meaningful treatment of the data.

The following are the hypotheses that were tested:

1. There are no significant differences between the means of definitely decided and undecided students on verbal ability.

2. There are no significant differences between the means of definitely decided and undecided students on quantitative ability.

3. There are no significant differences between the means of definitely decided and undecided students on correctness of expression.

4. There are no significant differences between the means of definitely decided and undecided students on natural science ability.

5. There are no significant differences between the means of definitely decided and undecided students on social science ability.

6. There are no significant differences between the means of definitely decided and undecided students on rate of reading.

It is necessary to formulate additional hypotheses for

testing the significance of the differences between the standard deviations squared (variances).

1. There are no significant differences between the variances of definitely decided and undecided students on verbal ability.

2. There are no significant differences between the variances of definitely decided and undecided students on quantitative ability.

3. There are no significant differences between the variances of definitely decided and undecided students on correctness of expression.

4. There are no significant differences between the variances of definitely decided and undecided students on natural science ability.

5. There are no significant differences between the variances of definitely decided and undecided students on social science ability.

6. There are no significant differences between the variances of definitely decided and undecided students on rate of reading.

The literature indicates that ages 17 to 18 are ages of tentative decision. It was, therefore, decided that tentatively decided students should be compared with the undecided students to see if significant differences exist both from the standpoint of means and the variances. Following are the hypotheses related to this comparison.

Hypotheses

1. There are no significant differences between the means of tentatively decided students and undecided students on verbal ability.

2. There are no significant differences between the means of tentatively decided and undecided students on quantitative ability.

3. There are no significant differences between the means of tentatively decided and undecided students on correctness of expression.

4. There are no significant differences between the means of tentatively decided and undecided students on natural science ability.

5. There are no significant differences between the means of tentatively decided and undecided students on social science ability.

6. There are no significant differences between the means of tentatively decided and undecided students on the rate of reading test.

It is necessary to formulate additional hypotheses for testing the significance of the differences between the variances. They are as follows:

1. There are no significant differences between the variances of the tentatively decided and the undecided students on verbal ability.

2. There are no significant differences between the variances of the tentatively decided and the undecided

students on quantitative ability.

3. There are no significant differences between the variances of the tentatively decided and the undecided students on correctness of expression.

4. There are no significant differences between the variances of the tentatively decided and the undecided students on social sciences ability.

5. There are no significant differences between the variances of the tentatively decided and the undecided students on natural sciences ability.

6. There are no significant differences between the variances of the tentatively decided and the undecided students on rate of reading.

In the following discussion the definitely decided group is compared with the tentatively decided group. The following null hypotheses are addressed to this end.

Hypotheses

1. There are no significant differences between the means of definitely decided students and tentatively decided students on verbal ability.

2. There are no significant differences between the means of definitely decided students and tentatively decided students on quantitative ability.

3. There are no significant differences between the means of definitely decided students and tentatively decided students on correctness of expression.

4. There are no significant differences between the means of definitely decided students and tentatively

decided students on natural science ability.

5. There are no significant differences between the means of definitely decided students and tentatively decided students on social science ability.

6. There are no significant differences between the means of definitely decided students and tentatively decided students on rate of reading.

It is necessary to formulate additional hypotheses for testing the significance of the differences between the variances. They are as follows:

1. There are no significant differences between the variances of the definitely decided students and the tentatively decided students on verbal ability.

2. There are no significant differences between the variances of the definitely decided students and the tentatively decided students on quantitative ability.

3. There are no significant differences between the variances of the definitely decided students and the tentatively decided students on correctness of expression.

4. There are no significant differences between the variances of the definitely decided students and the tentatively decided students on social science ability.

5. There are no significant differences between the variances of the definitely decided students and the tentatively decided students on natural science ability.

6. There are no significant differences between the variances of the definitely decided students and the tentatively decided students on rate of reading.

The Definitely Decided and Undecided Compared

The words, "zero point", in the discussion that follows means that there is no discrepancy between a subject's actual test score and his self-estimate. When the word "mean", is used, mean of the differences is meant. Algebraic discrepancies were computed taking into account both direction and distance.

The direction of the "mean" is toward over-estimation of verbal ability for both undecided and definitely decided groups. The definitely decided group showed a significant over-estimate at the 5% level. The undecided group did not significantly over-estimate itself on verbal ability. These differences, however, were not found to be significantly different from each other. Table II compares the definitely decided group with the undecided group. The "mean" of the undecided group on verbal ability is closer to the zero point than is the "mean" of definitely decided group. This tends to indicate that in predicting actual test scores on a test of verbal ability, the undecided students are more accurate than the definitely decided students.

On quantitative ability the definitely decided group is closer to the zero point than is the undecided group. On this test variable, the undecided group over-estimates itself (significant at 5% level) by nearly three points and the definitely decided group over-estimates itself by one point. (not significant) These "means" were significantly different from each other at the five per cent level.

TABLE II

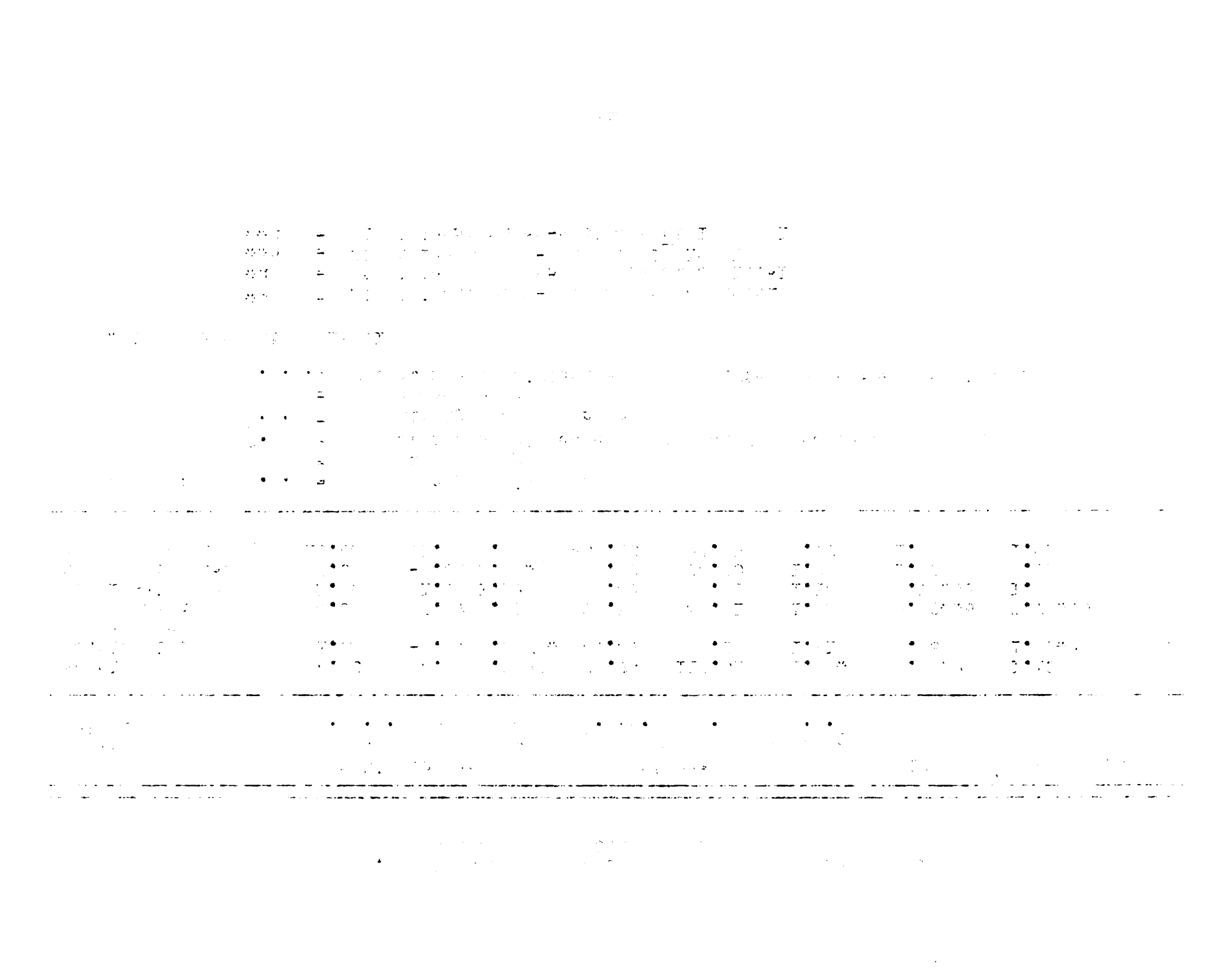
MEANS, VARIANCES AND STANDARD DEVIATIONS OF DEFINITELY DECIDED AND UNDECIDED GROUPS

Test Variable	Mean Difference			Variance			Difference from zero	
	M. D.D.	U.	t M	V.D.D.	V.U	F S.D.^{2}	t DD	U
Verbal	4.26	2.30	.8789	66.74	112.01	1.68*	2.80*•	1.19
Quantitative	1.02	-2.97	1.9975*	67.57	82.08	1.21	.66	1.79*u
Correctness of Expression	3.59	3.97	.31	27.30	33.21	1.22	3.70**•	3.78**•
Social Sciences	2.69	1.40	1.17	21.37	24.64	1.15	3.13**•	1.54
Natural Sciences	3.07	-1.00	2.20*	68.39	65.20	1.05	1.99	.68
Rate of Reading	16.63	11.53	.36	4200.66	3584.33	1.17	1.38	1.05

Legend:
- D.D. = Definitely Decided Group
- U = Undecided Group
- t.M = t test for significance of the difference between the means
- D.D. = Definitely Decided group
- U = Undecided group
- F.S.D.^{2} = F test for significance of the difference between variances

*Significant at 5% level

- *• = Significant over-estimate at 5% level
- *u = Significant under-estimate at 5% level
- **• = Significant over-estimate 1% level
- **u = Significant under-estimate at 1% level



Both groups over-estimate themselves on this ability, at the 1% level. No significant differences were found between the means and therefore, no significance should be attached to the "observed" differences. The definitely decided group estimates itself more accurately than the undecided group on the correctness of express test.

On social science ability the undecided group is closer to the zero point of no discrepancy than is the definitely decided group. The direction of the mean for both groups is toward over-estimation (definitely decided significantly over-estimate themselves at 1% level, the undecided do not significantly over-estimate themselves), with no significant differences between the means found. Again, while slight differences were observed, no significance should be attached to them.

On natural science ability, the undecided group is closer to the zero point than is the definitely decided group. The undecided group, however, under-estimates (not significantly) itself and the definitely decided group over-estimates itself (not significantly). These differences were found to be statistically significant at the five per cent level.

The undecided group estimates its reading speed more accurately than does the definitely decided group. Both groups over-estimate (not significantly) their speed of reading. However, no significant difference between the means was found. Therefore, no significance should be attached to the

observed differences.

Significant differences were found at the five per cent level between the means of the definitely decided and undecided groups on quantitative and natural science ability. On no other variables were significant differences between the means found.

Significant differences between the variances was found on the verbal test. On no other tests were significant differences between variances found.

The Tentatively Decided and Undecided Groups Compared

Table III illustrates the comparison of the tentatively decided students with the undecided students.

The mean of the tentatively decided group on verbal ability is closer to the zero point than is the mean of the undecided group. These differences were not found to be significant. The direction of the mean is toward over-estimation (not significant) for both groups.

Closer agreement between self-estimates and actual test scores is achieved by the tentatively decided group on quantitative ability. However, both undecided and tentatively decided groups under-estimate their ability on the quantitative test with no significant difference betweeen means found. The undecided significantly under-estimated themselves on quantitative ability. The tentative group did not show a significant under-estimate.

On the correctness of expression test the tentatively

decided group showed slightly closer agreement between self-estimates and actual test scores than the undecided group. The direction of the mean was toward over-estimation for both groups (significant at 1% level) with no significant difference between the means found.

On the social science test the tentatively decided group again showed slightly closer agreement between self-estimates and actual test scores than the undecided group. The tentatively decided group showed an over-estimation significant at the 5% level. Both groups over-estimated their abilities on this test, however, The undecided group did not over-estimate significantly. No significant difference between means was found.

On the natural science test the undecided group was closer to the zero point than was the tentatively decided group. On this test, the undecided group under-estimated itself by one point and the tentatively decided group over-estimated itself by one point (neither was significant.) No significant difference between means was found.

On the rate of reading test the tentatively decided group is closer to the "no discrepancy" point than is the undecided group. The tentatively decided group under-estimated itself slightly and the undecided group over-estimated itself (neither significantly.) No significant difference between the means was found.

Significant differences between the variances at the five per cent level were found on the verbal, quantitative,

TABLE III

MEANS, VARIANCES, AND STANDARD DEVIATIONS OF TENTATIVELY DECIDED AND UNDECIDED GROUPS

Test Variable	Mean Difference		t	Variance		F	t Difference from zero	
	T.D.	U	M	T.D.	U	S.D.^{2}	T.D.	U
Verbal	1.43	2.30	.41	63.21	112.01	1.77*	1.61	1.19
Quantitative	-0.27	-2.97	1.48	48.63	82.08	1.69*	.34	1.79*u
Correctness of Expression	3.47	3.97	.42	24.97	33.21	1.33	6.01**o	3.78**o
Social Sciences	1.33	1.40	..07	17.00	24.64	1.45	2.83*o	1.54
Natural Sciences	1.06	-1.00	1.26	37.59	65.20	1.73*	1.54	.68
Rate of Reading	-0.14	11.53	.48	37219.60	3584.33	10.38**	.06	1.05

Legend:
T.D. = Tentatively Decided group
U = Undecided group
t M. = Significance of the differences between means
T.D. = Tentatively Decided group
U = Undecided group
F. S.D.^{2} = Significance of the differences between variances

* - 5% level
** - 1% level

*o - Significant over-estimate at 5% level
*u - Significant under-estimate at 5% level
**o - Significant over-estimate at 1% level
**u - Significant under-estimate at 1% level

and natural science test. Significant differences between the variances at the one per cent level were found on the rate of reading test.

The Tentatively Decided and Definitely Decided Compared

Attention is now directed to the comparison of tentatively decided students with definitely decided students with comparison shown in Table IV.

The tentatively decided group's mean is closer to perfect agreement than is the definitely decided group's mean. This difference in means was found to be significantly different at the five per cent level. Both groups tend to over-estimate their ability on the verbal test, with the definitely decided group over-estimating at the 5% level. The tentatively decided group did not over-estimate significantly.

On quantitative ability, the tentatively decided group is more accurate than the decided group in predicting actual test scores. However, this difference was not found to be significant. Therefore, no generalizable conclusion is warranted. On this test the tentatively decided group under-estimates itself and the definitely decided group over-estimates itself (neither significantly). The tentatively decided group is slightly more accurate than the definitely decided group in predicting its actual test score on the correctness of expression test although not significantly so. Both groups tend to over-estimate themselves on this variable (significant at 1% level).

On the social sciences test the tentatively decided gr-

TABLE IV

MEANS, VARIANCES, AND DIFFERENCE FROM ZERO OF TENTATIVELY DECIDED AND DEFINITELY DECIDED GROUPS

Test Variable	Mean Difference		t	Variance		F	t Difference from zero	
	DD	T.D.	M	DD	T.D.	$S.D.^2$	TD	DD
Verbal	4.26	1.43	1.98*	66.74	63.21	1.06	1.61	2.80*e
Quantitative	1.02	-0.27	.94	67.57	48.63	1.39	.34	.66
Correctness of Expression	3.59	3.47	.13	27.30	24.97	1.09	6.01**e	3.70**e
Social Sciences	2.69	1.33	1.72	21.37	17.00	1.26	2.83*e	3.13**e
Natural Sciences	3.07	1.06	1.52	68.39	37.59	1.82**	1.54	1.99
Rate of Reading	16.63	-0.14	.72	4200.66	37219.60	8.86**	..06	1.38

Legend:

DD = Definitely Decided Group
T.D = Tentatively Decided Group
tM = Significance of the difference between the means
DD = Definitely Decided Group
T.D = Tentatively Decided Group
F $S.D^2$ = Significance of the differences between the variances

* = 5% level
** = 1% level
*a = Significant over-estimate at 5% level
*u = Significant under-estimate at 5% level
**e = Significant over-estimate at 1% level
**u = Significant under-estimate at 1% level

oup is more accurate than the definitely decided group in predicting its performance although not significantly so. Over-estimation is noted for both groups with the definitely decided group over-estimating itself (at 1% level) more than the tentatively decided group (at 5% level)

On the natural science test over-estimation (not significant) is again observed for both groups with the tentatively decided group showing more accuracy of self-knowledge than the definitely decided group, although not significantly so.

The tentatively decided group is more accurate than the definitely decided group in predicting its performance on rate of reading, although not significantly so. The over-estimation of the definitely decided group is not significant and the under-estimation of the tentatively decided group is not significant.

A significant difference between the means at the five per cent level is seen on the verbal ability test. Significant differences between the means is not seen on any other test. When variances are examined, significant differences at the five per cent level are observable on the natural science and rate of reading tests.

Table 5 indicates that the tentatively decided students have an average age of 17.70 and had held their tentative vocational choice for a period of 2.32 years. This would also indicate that the tentatively decided students fixed upon a vocational choice at age 15.38 years.

TABLE 5

AGES AND LENGTH OF VOCATIONAL DECISION

Group	Mean Ages	Mean length of Vocational Decision
Tentatively Decided	17.70	2.32
Definitely Decided	17.47	2.84
Undecided	17.56	- --

Table 5 also indicates that the definitely decided students have an average age of 17.47 and felt that they were definitely decided at age 14.63.

The undecided group, as seen in Table 5, have an average age of 17.56 years.

The Equivalence Table of Means (Table VI) shows, from inspection, that the tentatively decided students come closer to the zero point than the definitely decided and undecided students. It also indicates that the undecided students are superior to the definitely decided students. While these are not generalizable conclusions and not shown to be statistically significant, this trend is apparent. In the following table, 1,2, and 3 are simply ranks indicating which of the three groups ranked in first place regarding accuracy of predicting actual test scores.

TABLE VI

EQUIVALENCE TABLE OF MEANS

Variable	1	2	3	
V	T.D. <	U <	D.D.	1 - 3*
Q	T.D. <	D.D. <	U	2 - 3*
C.E.	T.D. <	D.D. <	U	
S.S.	T.D. <	U <	D.D.	
N.S.	U <	T.D <	D.D.	1 - 3*
R	T.D. <	U <	D.D.	

* = .05 level of significance

SUMMARY

The analysis of the data relevant to the investigation of the Null Hypotheses of this study has been presented in this chapter.

The null hypothesis that there are no significant differences between the means of definitely decided and undecided students on verbal ability, is accepted.

The null hypothesis that there are no significant differences between the means of definitely decided and undecided students on quantitative ability may be rejected at the five per cent level of significance.

The null hypothesis that there are no significant differences between the means of definitely decided and undecided students on correctness of expression is accepted.

The null hypothesis that there are no significant differences between the means of definitely decided and undecided students on natural science ability may be rejected at the five per cent level of significance.

The null hypothesis that there are no significant differences between the means of definitely decided and undecided students on social science ability is accepted.

The nullhypothesis that there are no significant differences between the means of definitely decided and undecided students on rate of reading is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided and undecided students on verbal ability may be rejected, at the

five per cent level of significance.

The null hypothesis that there are no significant differences between the variances of definitely decided and undecided students on quantitative ability is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided and undecided students on correctness of expression is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided and undecided students on matural science ability is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided and undecided students on social science ability is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided and undecided students on social science ability is accepted.

The null hypothesis that there are no significant differences between the means of tentatively decided and undecided students on verbal ability is accepted.

The null hypothesis that there are no significant differences between the means of tentatively decided students and undecided students on quantitative ability is accepted.

The null hypothesis that there are no significant differences between the means of tentatively decided students and undecided students on correctness of expression is accepted.

The null hypothesis that there are no significant differences between the means of tentatively decided students and undecided students on natural science ability is accepted.

The null hypothesis that there are no significant differences between the means of tentatively decided and undecided students on social science ability is accepted.

The null hypothesis that there are no significant differences between the means of tentatively decided students and undecided students on rate of reading is accepted.

The null hypothesis that there are no significant differences between the variances of the tentatively decided and the undecided students on verbal ability may be rejected at the five per cent level of significance.

The null hypothesis that there are no significant differences between the variances of the tentatively decided and the undecided students on quantitative ability may be rejected at the five per cent level of significance.

The null hypothesis that there are no significant differences between the variances of the tentatively decided and the undecided students on correctness of expression is accepted.

The null hypothesis that there are no significant differences between the variances of the tentatively decided and undecided students on social science ability is accepted.

The null hypothesis that there are no significant differences between the variances of the tentatively decided and the undecided students on rate of reading may be rejected at

the one per cent level of significance.

The null hypothesis that there are no significant differences between the variances of the tentatively decided and the undecided studentson natural science ability may be rejected at the five per cent level of significance.

The null hypothesis that there are no significant differences between the means of definitely decided students on verbal ability is rejected at the five per cent level of significance.

The null hypothesis that there are no significant differences between the means of definitely decided students and tentatively decided students on quantitative ability is acdepted.

The null hypothesis that there are no significant differences between the means of definitely decided students and tentatively decided students on correctness of expression is accepted.

The null hypothesis that there are no significant differences between the means of definitely decided students and tentatively decided students on social science ability is accepted.

The null hypothesis that there are no significant differences between the means of definitely decided students and tentatively decided students on natural science ability is accepted.

The null hypothesis that there are no significant differences between the means of definitely decided students and tentatively decided students on rate of reading is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided students and tentatively decided students on verbal ability is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided students and tentatively decided students on quantitative ability is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided students and tentatively decided students on correctness of expression is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided and tentatively decided students on social science ability is accepted.

The null hypothesis that there are no significant differences between the variances of definitely decided students and tentatively decided students on natural science ability is rejected at the one per cent level of significance.

The null hypothesis that there are no significant differences between the variances of definitely decided students and tentatively decided students on rate of reading is rejected at the one per cent level of significance.

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS FOR FURTHER RESEARCH

There were six aspects of the problem of self-concept under investigation in this study:

1. Are there significant differences between definitely decided and undecided students vocationally?

2. Do the definitely decided students show more accuracy of self-knowledge than the undecided students relative to six scholastic abilities, generally associated with academic success?

3. Are there significant differences between tentatively decided and undecided students?

4. Do the tentatively decided students show superior self-knowledge to the undecided students relative to six scholastic abilities generally associated with academic success?

5. Are there significant differences between tentatively decided and definitely decided students?

6. Do the definitely decided students show more accuracy of self-knowledge than the tentatively decided students?

One hundred and sixty-three students, all male entering college freshmen who had been admitted by certificate, participated in this study. They were given a self-valuation questionnaire in which they indicated whether they were definitely decided, tentatively decided, or undecided on a vocationally choice. They also gave their self-estimates on

six different scholastic abilities generally associated with academic success. Actual test scores were obtained for each of the six scholastic abilities which were verbal, quantitative, grammar, social science, natural science, and rate of reading.

Of the 163 students participating in the study, 79 were tentatively decided, 54 were definitely decided and 30 were undecided.

The tentatively decided group was observed to have a mean age of 17.70 years. This group had fixed upon a tentative vocational choice at age 15.38 years.

The definitely decided group was observed to have an average age of 17.47 years. These students had fixed upon a definite vocational choice at age 14.63 years.

The undecided group was observed to have an average of 17.56 years.

Since no significant differences were found between the means of the tentatively decided and undecided groups no conclusion regarding clarity of self-concept is possible. Significant differences were found between the variances on verbal, quantitative, and natural science tests indicating a greater homogeneity for the tentatively decided group. Greater homogeneity may be concluded from the significant difference in the variance between the tentatively decided and undecided group with the undecided group manifesting the greater homogeneity.

It may be further concluded that the tentatively decided

group shows a greater clarity of self-concept than the undecided group when quantitative ability is employed.

The undecided group manifested greater clarity of self-concept than the definitely decided group on the natural science ability test.

These latter two paragraphs have somewhat of a cancelling effect regarding the acceptance or rejection of Super's proposition. The results are such that Super's proposition can neither be accepted or rejected.

Implications for Further Research

It may be more suitable in the future to examine attributes of self-concept other than scholastic abilities for ascertaining whether or not vocationally decisive people have better self-knowledge than vocationally undecided people. It may be that interests and values are better perceived by academically able students. They are easier to talk about and easier to describe.

It should be emphasized that the generalization level is constricted due to the special quality of the sample. The subjects were not typical of a college entering freshmen class since they all had been admitted by certificate. A group was used as a sampling unit rather than a person.

Wayne State University is an atypical school from the standpoint of its large city character. This fact plus the nature of the subjects used should be kept in mind in terms of the generalizations that can be made from the results.

In conclusion, it may be said that there appears to be some relationship between self-concept and vocational choice. More extensive investigations in the realm of interests, values, and personality may provide a more solid criteria for the measurement of self-concept clairty.

APPENDIX A

SELF_VALUATION QUESTIONNAIRE

COUNSELING and TESTING BUREAU
DIVISION of STUDENT PERSONNEL
WAYNE STATE UNIVERSITY

IMPORTANT: FILL OUT and RETURN WITHIN THREE DAYS.
You will be contacted later for interest testing. The results of this questionnaire will be used to aid in counseling you and for research. The results will be held in strict confidence. FILL IT OUT AND RETURN IT WITHIN THREE DAYS AFTER YOU RECEIVE IT! Return it in the enclosed envelope to: R. Tilchen, Counseling & Testing Bureau, Wayne State University, Detroit 2, Michigan.

Name _____ Address: _____

Age _____ Sex _____ Specific major (If no major, curriculum you have signed up for) _____

_____

Which one of the following 4 statements best describes you? CHECK ONLY ONE BOX!!!!

☐ 1. I am completely undecided on an occupational goal and no definite decision is possible at this time. (By occupational goal, we mean specific job titles such as accountant, physician, nurse, etc.)

☐ 2. I am considering many possible occupational goals but can't decide on any particular two or three.

☐ 3. I have made a tentative decision on one occupational goal. It is _____
How long have you had this tentative decision? _____

☐ 4. I have made a definite decision on one occupational goal. It is _____
How long have you had this definite decision in mind? _____

We want to know how you feel you would score if you were to be tested on the following abilities. Rate yourself in the following abilities in comparison with other Wayne Freshmen. Write in a number from 1 to 100 in the spaces provided according to the following chart:

1 to 10	means you feel you are poor in the ability in comparison with other Wayne Freshmen.
11 to 39	means you feel you are below average in the ability in comparison with other Wayne Freshmen.
40 to 60	means you feel you are average in the ability in comparison with other Wayne Freshmen.
60 to 89	means you feel you are above average in the ability in comparison with other Wayne Freshmen.
90 to 99	means you feel you are superior in the ability in comparison with other Wayne Freshmen.

in verbal ability _____ (This means size of vocabulary, ability to use words effectively)
in mathematical ability _____
in English grammar _____
in ability to interpret social studies _____
in ability to interpret natural sciences _____ (Subjects like chemistry, biology, etc.)
in speed of reading _____

APPENDIX B

RAW SCORES OF SELF-ESTIMATES
ACTUAL TEST SCORES
TABLES OF DISCREPANCIES
STATISTICAL TREATMENT SUMMARY TABLES

SELF ESTIMATE RAW SCORES AND ACTUAL TEST SCORES OF DEFINITELY DECIDED GROUP

	SELF ESTIMATES						ACTUAL TEST SCORES					
Subject #	V	Q	CE	SS	NS	R	V	Q	CE	SS	NS	R
1	64	61=56		49	43	368	57	53	55	46	38	629
2	59	43	52	49	41	344	39	42	52	45	22	160
3	47	41	51	51	30	299	30	32	47	44	13	178
4	57	61	57	49	39	356	48	47	46	48	27	277
5	54	51	52	48	37	343	44	37	50	35	28	299
6	59	54	56	46	41	281	65	55	53	45	37	277
7	48	51	51	43	38	295	33	47	40	35	32	204
8	59	34	52	48	28	295	55	49	56	50	34	316
9	45	49	49	43	34	295	39	54	49	45	27	286
10	47	46	51	47	37	342	29	39	44	43	25	282
11	48	51	51	49	38	308	49	47	42	47	32	286
12	47	42	52	46	36	295	28	43	47	34	17	217
13	49	52	51	49	42	308	59	60	46	50	43	355
14	59	46	56	48	34	356	57	49	57	48	32	316
15	47	43	52	46	34	295	54	46	47	50	28	230
16	59	36	53	49	28	282	62	38	53	48	34	295
17	60	60	58	51	44	365	64	65	55	53	41	299
18	48	37	52	47	37	311	55	37	40	48	40	321
19	62	40	57	52	43	368	65	50	56	51	48	316
20	46	37	50	46	32	329	52	53	42	49	43	234
21	52	34	51	43	37	295	58	50	54	45	36	247
22	47	41	51	47	37	282	50	37	52	46	23	269
23	55	48	51	48	32	308	40	34	48	44	25	243
24	47	51	47	49	37	308	45	50	45	48	37	325
25	59	39	55	49	38	364	53	36	50	45	39	416
26	52	48	53	48	42	343	47	52	47	44	34	377
27	51	40	51	45	38	308	61=56		57	45	**31**	325
28	50	37	51	46	31	343	47	41	51	45	32	286
29	47	45	49	43	28	295	53	37	48	42	23	303
30	59	34	51	49	30	309	52	23	38	49	44	329
31	54	50	57	48	38	268	34	37	51	32	17	256
32	59	40	54	44	31	277	57	54	47	44	37	247
33	51	43	52	46	36	282	42	25	49	26	20	308
34	**46**	**48**	**52**	**47**	38	295	**35**	**39**	**34**	**42**	32	**260**
35	**47**	**37**	**49**	**43**	34	316	**38**	**39**	**47**	**38**	21	**269**
36	59	60	56	49	38	368	56	54	56	47	41	247
37	54	51	53	47	40	295	54	50	50	49	29	238
38	52	41	56	48	37	312	50	39	49	40	27	242
39	55	53	42	46	28	355	57	49	40	**51**	45	282

Continued

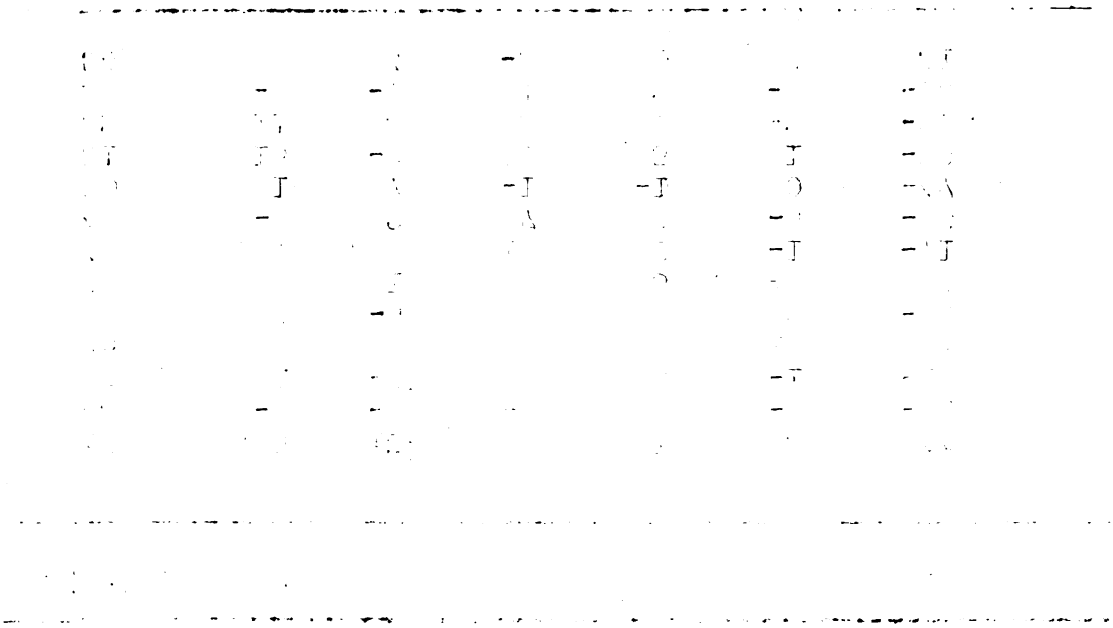
	SELF ESTIMATES						ACTUAL TEST SCORES					
Subject #	V	Q	CE	SS	NS	R	V	Q	CE	SS	NS	R
40	47	46	49	45	37	308	35	38	36	43	32	282
41	59	46	55	50	32	360	55	49	54	49	41	334
42	55	55	53	50	40	308	52	42	50	49	35	264
43	52	51	52	48	41	308	55	55	56	45	43	329
44	47	48	47	48	39	290	46	52	43	45	40	308
45	57	53	56	48	42	295	48	47	51	42	30	269
46	50	51	57	43	37	308	46	57	53	37	35	386
47	58	40	52	48	32	329	37	39	44	45	38	325
48	52	51	53	49	37	336	45	43	41	43	38	407
49	55	51	51	49	43	295	57	49	44	45	46	321
50	50	37	52	49	34	308	49	30	53	50	34	355
51	59	37	53	48	40	364	44	39	48	45	39	403
52	59	55	55	49	38	355	48	50	53	42	40	381
53	47	25	49	52	32	403	52	32	48	50	34	468
54	58	61	53	48	43	343	51	58	55	48	39	312

DIFFERENCES BETWEEN THE SELF-ESTIMATES AND ACTUAL TEST SCORES FOR THE DEFINITELY DECIDED GROUP

Subject #	V	Q	CE	SS	NS	R
1	7	8	1	3	5	-260
2	20	1	0	4	19	184
3	17	9	4	1	17	121
4	7	14	11	1	12	79
5	10	14	2	13	9	44
6	-6	-1	3	1	4	4
7	15	4	11	8	6	91
8	4	-15	-4	-2	-6	-21
9	6	-5	0	-2	7	9
10	18	7	7	4	12	60
11	-1	4	9	2	6	22
12	19	-1	5	12	19	78
13	-10	-8	5	-1	-1	-47
14	2	-3	-1	0	2	40
15	-7	-3	5	-4	6	65
16	-3	-2	0	1	-6	-13
17	-4	-5	3	-2	3	66
18	-7	0	12	-1	-3	10
19	-3	-10	1	1	-8	52
20	-6	-16	8	-3	-11	95
21	-6	-16	-3	-2	1	48
22	-3	4	-1	1	15	13
23	15	14	3	4	7	65
24	2	1	2	1	0	-17
25	6	3	5	4	-1	-52
26	5	-4	6	4	8	-34
27	-10	-16	-6	0	-3	-17
28	3	-4	0	1	-1	57
29	-6	8	1	1	5	-8
30	7	11	13	0	-14	-20
31	20	13	6	16	21	12
32	2	-14	7	0	-6	30
33	9	18	3	20	16	-26
34	11	9	18	5	6	35
35	9	7	2	5	13	47
36	3	-5	0	2	-3	121
37	0	1	3	-2	11	57
38	2	2	7	8	10	69
39	-2	4	-12	-5	-17	73
40	12	8	13	2	5	26
41	4	-3	1	1	-9	26

Continued

Subject #	V	Q	CE	SS	NS	R
42	3	13	3	1	5	44
43	-3	-4	-4	3	-2	-21
44	1	-4	4	3	-1	-18
45	9	6	5	6	12	26
46	4	-6	4	6	2	-78
47	21	1	8	3	-6	4
48	7	8	12	6	-1	-71
49	-2	2	7	4	-3	-26
50	1	7	-1	-1	0	-47
51	15	-2	5	3	1	-39
52	11	5	2	7	-2	-26
53	-5	-7	1	2	-2	-65
54	7	3	-2	0	4	31



STATISTICAL TREATMENT SUMMARY FOR THE DEFINITELY DECIDED GROUP

	V	Q	CE	SS	NS	R
Total Negative	-84	-154	-34	-25	-103	-906
Total Positive	314	209	228	170	269	1804
Sum of - and +	230	55	194	145	166	898
Total of Squares	4584	3705	2170	1545	4202	241770
Sum of Squares	84.89	68.61	40.19	28.61	77.81	4477.22
No. of Observations						
Mean discrepancy	4.26	1.02	3.59	2.69	3.07	16.63
Variance	66.74	67.57	27.30	21.37	68.39	4200.66
Standard Deviation	8.169	8.220	5.224	4.622	8.269	64.80

SELF-ESTIMATE RAW SCORES AND ACTUAL TEST SCORES
OF THE TENTATIVELY DECIDED GROUP

	SELF ESTIMATES						ACTUAL TEST SCORES					
Subject #	V	Q	CE	SS	NS	R	V	Q	CE	SS	NS	R
	11	21	31	41	51	61	71					
1	57	47	55	48	36	349	48	41	54	41	35	308
2	45	40	50	44	32	295	39	41	42	43	28	234
3	51	40	52	47	31	308	54	51	55	52	34	299
4	50	51	51	48	38	308	57	53	56	48	39	247
5	57	37	52	48	31	368	62	43	55	48	37	286
6	55	40	49	47	37	295	57	53	47	45	40	355
7	57	40	51	49	36	356	45	42	53	46	33	286
8	48	46	52	42	34	295	51	47	49	38	31	234
9	47	48	54	45	30	316	42	42	44	43	31	312
10	57	48	53	47	41	342	48	46	50	44	43	238
11	52	41	55	43	28	295	43	45	57	45	28	295
12	50	43	50	45	34	299	54	53	53	48	37	282
13	52	40	53	47	33	308	52	40	44	37	34	273
14	48	48	48	44	33	312	57	56	48	46	47	334
15	62	52	56	50	39	403	64	56	54	52	43	438
16	59	36	53	50	30	433	37	23	44	50	23	628
17	47	40	49	47	40	312	60	35	48	45	46	377
18	51	40	55	45	30	286	52	42	52	47	27	234
19	52	52	51	48	36	308=	53	58	45	50	41	355
20=	52	46	46	49	43	295	55	57	47	51	45	308
21	48	39	49	44	32	299	43	36	44	49	35	264
22	45	51	51	49	40	282	33	34	42	38	26	316
23	57	41	52	45	38	295	37	39	42	44	34	230
24	50	49	51	50	36	334	42	41	42	44	36	316
25	55	34	55	45	40	343	52	35	56	46	39	364
26	59	37	51	52	31	403	54	32	51	49	36	628
27	54	34	49	49	36	355	54	40	51	49	36	355
28	55	54	53	49	40	316	39	42	44	39	26	225
29	59	40	51	52	28	243	49	39	47	44	39	243
30	47	41	55	49	36	356	56	52	55	45	26	342
31	50	45	49	49	31	312	47	45	41	44	28	308
32	50	37	49	43	32	295	50	33	42	50	37	243
33	43	54	52	45	37	299	38	44	43	41	30	295
34	47	51	55	49	38	342	41	50	53	46	34	303
35	44	46	49	45	36	280	41	44	44	38	31	286
36	50	34	51	47	37	342	36	35	53	39	25	277
37	48	50	53	47	39	316	44	40	52	46	37	277
38	57	41	55	48	36	364	65	50	56	47	41	316
39	50	50	54	49	38	364	40	39	30	44	34	395
40	50	48	51	47	38	308	56	53	50	47	35	234
41	37	50	47	43	38	295	36	43	45	41	30	316
42	57	38	54	48	34	295	64	48	47	52	39	390
43	57	55	55	49	40	356	45	49	54	48	30	238

-- Continued

	SELF-ESTIMATES						ACTUAL TEST SCORES					
Subject #	V	Q	CE	SS	NS	R	V	Q	CE	SS	NS	R
	11	21	31	41	51	61	71					
44	55	43	51	47	30	295	46	53	52	44	26	355
45	57	55	54	48	39	329	55	56	46	46	34	420
46	50	46	47	48	37	295	44	42	43	44	37	230
47	51	40	49	46	31	295	59	52	51	45	34	286
48	57	46	55	43	35	312	61	51	46	44	45	386
49	54	37	53	43	40	403	52	27	47	47	32	308
50	50	60	51	47	42	342	63	61	48	51	47	455
51	59	43	55	46	37	368	51	38	50	38	18	403
52	47	24	49	43	30	295	46	29	49	41	37	334
53	52	38	49	49	34	312	59	46	55	51	38	386
54	52	37	52	47	30	282	46	42	46	48	35	243
55	50	40	51	45	32	308	49	40	43	43	29	273
56	50	48	53	49	42	364	70	61	54	52	50	451
57	50	45	51	48	40	308	53	48	50	42	32	481
58	55	46	52	47	34	329	43	38	52	43	29	312
59	52	51	51	48	34	342	44	46	42	45	34	286
60	47	43	50	45	38	299	46	44	42	49	37	394
61	48	40	50	44	32	277	41	37	39	33	39	260
62	59	52	55	48	42	373	46	38	47	41	25	455
63	50	43	53	48	38	342	55	45	53	45	33	316
64	55	37	54	49	39	403	52	42	44	44	39	420
65	50	49	54	48	37	299	56	55	56	45	36	303
66	45	40	47	43	33	316	50	38	49	48	31	273
67	54	61	53	49	35	282	61	65	55	52	38	295
68	50	40	51	45	32	308	35	42	53	42	28	334
69	50	34	51	49	40	282	59	35	51	43	29	286
70	61	51	54	49	42	368	63	47	50	49	42	295
71	54	46	49	45	40	342	53	48	41	46	30	351
72	42	34	49	47	32	356	49	41	41	50	31	451
73	47	38	48	45	31	295	52	47	38	47	34	316
74	51	37	51	47	29	316	53	31	48	48	39	295
75	47	42	51	45	34	295	55	46	51	51	34	234
76	45	40	49	41	32	280	45	38	49	44	31	334
77	47	40	47	46	32	295	54	47	41	45	34	269
78	54	34	53	43	36	308	50	28	43	47	32	355
79	50	52	51	47	34	308	47	46	49	46	39	277

DIFFERENCES BETWEEN THE SELF-ESTIMATES AND ACTUAL TEST SCORES FOR THE TENTATIVELY DECIDED GROUP

Subject #	V	Q	CE	SS	NS	R
1	9	6	1	7	1	41
2	6	-1	8	1	4	61
3	-3	-11	-3	-5	-3	9
4	-7	-2	-5	0	-1	61
5	-5	-6	-3	0	-6	82
6	-2	-13	2	2	-3	-60
7	12	-2	-2	3	3	70
8	-3	-1	3	4	3	61
9	5	6	10	2	-1	4
10	9	2	3	3	-2	104
11	9	4	2	2	10	0
12	-4	-10	-3	-3	-3	17
13	0	0	9	10	-1	35
14	-9	-8	0	-2	-14	-22
15	-2	-4	2	-2	-4	-35
16	22	13	9	0	7	-195
17	-13	5	1	2	-6	- 65
18	-1	-2	3	-2	3	52
19	-1	-6	6	-2	-5	-47
20	-3	-11	-1	-2	-2	-13
21	5	3	5	-5	-3	35
22	12	17	9	11	4	34
23	20	2	10	1	4	65
24	8	8	9	6	0	18
25	3	-1	-1	-1	1	-21
26	5	5	0	3	-5	-125
27	0	-6	-2	0	0	0
28	16	12	9	10	14	91
29	10	1	4	8	- 11	0
30	-9	-11	0	4	10	14
31	3	0	8	5	3	4
32	0	4	7	-7	-5	52
33	5	10	9	4	7	4
34	6	1	2	3	4	39
35	3	2	5	7	5	-6
36	14	-1	-2	8	12	65
37	4	10	1	1	2	39
38	-8	-9	-1	1	-5	48
39	10	11	24	5	4	-30
40	-6	-5	1	0	3	74
41	1	7	2	2	8	-21
42	-7	-10	7	-4	-5	5
43	12	6	1	1	10	118
44	11	-10	1	3	4	-60
45	2	-1	8	2	5	-91
46	6	4	4	4	0	65
47	8	12	2	1	3	9

Continued

Subject #	V	Q	CE	SS	NS	R
48	-4	-5	9	-1	0	-74
49	2	10	6	-4	8	95
50	-13	-1	3	-4	-5	-113
51	8	5	5	8	19	-35
52	1	-5	0	2	-7	-39
53	-7	-8	-6	-2	-4	-74
54	6	-5	6	-1	-5	39
55	1	0	8	2	3	25
56	-20	-13	-1	-3	-8	-87
57	-3	-3	1	6	8	-173
58	12	8	0	4	5	17
59	8	5	9	3	0	56
60	1	-1	8	-4	1	-95
61	7	3	11	11	-7	17
62	13	14	8	7	17	-82
63	-5	-2	0	3	5	26
64	3	-5	10	5	0	-17
65	-6	-6	-2	3	1	-4
66	-5	12	-2	-5	2	43
67	-7	-4	-2	-3	-3	-13
68	15	-2	-2	3	4	-26
69	-9	-1	0	6	11	-4
70	-2	4	4	0	0	73
71	1	-2	8	-1	10	-9
72	-7	-7	8	-3	1	-95
73	-5	-9	10	-2	-3	-21
74	-2	6	3	-1	10	21
75	-7	-4	0	-6	0	61
76	0	2	0	-3	1	-54
77	-7	-7	6	1	-2	26
78	4	6	10	-4	4	-43
79	3	6	2	1	-5	31

STATISTICAL TREATMENT SUMMARY FOR THE TENTATIVELY DECIDED GROUP

	V	Q	CE	SS	NS	R
Total Negative	-200	-237	-43	-84	-147	-1883
Total Positive	+313	216	317	189	231	1872
Sum of - and +	113	-21	274	105	84	11
Total of Squares	5155	3847	2924	1483	3058	294035
Sum of Squares	65.25	48.70	37.01	18.77	38.71	37219.62
Number of Observations						
Mean Discrepancy	1.43	-0.27	3.47	1.33	1.06	-0.14
Variance	63.21	48.63	24.97	17.00	37.59	37219.60
Standard Deviation	7.95	6.973	4.997=	4.123	6.131	192.9

Self-Estimate Raw Scores and Actual Test Scores of the Undecided Group

	SELF ESTIMATES						ACTUAL TEST SCORES					
Subject #	V	Q	CE	SS	NS	R	V	Q	CE	SS	NS	R
	11	21	31	41	51	61	71	11	21	31	41	51
1	47	45	48	44	31	295	55	40	38	48	41	230
2	48	41	52	45	32	277	51	62	45	50	44	368
3	59	46	55	47	30	295	66	61	53	51	47	377
4	50	40	51	46	33	308	56	54	49	48	43	295
5	47	37	49	47	36	295	49	41	38	48	41	316
6	55	38	52	48	33	377	67	48	50	52	39	277
7	48	33	51	47	42	342	47	32	45	44	35	238
8	48	46	41	45	32	307	40	46	41	44	29	334
9	58	55	54	49	40	329	52	42	47	52	33	234
10	54	41	52	49	29	329	62	54	60	43	34	360
11	47	51	49	49	40	295	46	46	41	46	33	230
12	46	48	50	47	34	277	41	42	37	35	24	221
13	54	46	52	47	40	377	61	58	48	49	34	442
14	50	34	51	45	30	295	24	26	43	34	22	286
15	43	38	47	43	34	308	49	52	47	39	39	295
16	50	37	52	45	30	342	24	24	52	31	24	329
17	47	35	47	45	31	282	47	37	21	43	26	256
18	52	45	53	37	36	316	50	44	47	44	33	269
19	55	42	52	47	36	295	60	58	56	50	41	338
20	44	53	49	49	36	282	29	44	46	48	27	195
21	46	41	47	42	30	282	41	45	37	39	34	243
22	50	55	54	48	28	295	58	55	55	40	29	282
23	60	41	57	49	41	308	37	40	58	45	27	355
24	55	38	51	47	30	308	68	49	55	52	44	451
25	55	42	53	46	32	308	48	47	57	48	36	321
26	47	41	50	45	33	395	28	47	44	47	39	269
27	52	48	57	49	38	316	44	41	46	46	28	217
28	59	38	55	48	28	368	54	43	52	44	34	355
29	46	41	51	44	32	316	52	47	53	46	40	316
30	50	40	51	45	36	308	47	50	53	46	43	282

DIFFERENCES BETWEEN THE SELF-ESTIMATES AND ACTUAL TEST SCORES FOR THE UNDECIDED GROUP

Subject #	V	Q	CE	SS	NS	R
1	-8	5	10	-4	-10	65
2	-3	-21	7	-5	-12	-91
3	-7	-15	2	-4	-17	-82
4	-6	-14	2	-2	-10	13
5	-2	-4	11	-1	-5	-21
6	-12	-10	2	-4	-6	100
7	1	1	6	3	7	104
8	8	0	10	1	3	-27
9	6	13	7	-3	7	95
10	-8	-13	-8	6	-5	-31
11	1	5	8	3	7	65
12	5	6	13	12	10	56
13	-7	-12	4	-2	6	-65
14	26	8	8	11	8	9
15	-6	-14	0	4	-5	13
16	26	13	0	14	6	13
17	0	-2	16	2	5	26
18	2	1	6	3	3	47
19	-5	-16	-4	-3	-5	-43
20	15	9	3	1	9	87
21	5	-4	10	3	-4	39
22	-8	0	-1	8	-1	13
23	23	1	-1	4	14	-47
24	-13	-11	-4	-5	-14	-143
25	7	-5	-4	-2	-4	-13
26	19	-6	6	-2	-6	26
27	8	7	11	3	10	99
28	5	5	3	4	-6	13
29	-6	-6	-2	-2	-8	0
30	3	-10	-2	-1	-7	26

STATISTICAL TREATMENT SUMMARY FOR
THE UNDECIDED GROUP

	V	Q	CE	SS	NS	R
Total Negative	-91	-163	-26	-40	-125	-563
Total Positive	160	74	145	82	95	909
Sum of - and +	69	-89	119	42	-30	346
Total of Squares	3519	2727	1469	798	1986	111518
Sum of Squares	117.30	90.90	48.97	26.60	66.20	3717.27
Number of Observations						
Mean Discrepancy	2.30	2.97	3.97	1.40	1.00	11.53
Variance	112.01	82.08	33.21	24.64	65.20	3584.33
Standard Deviation	10.587	9.059	5.762	4.963	8.074	59.86

13. Carter, H.D. "Vocational Interests and Job Orientation," Applied Psychology Monographs (1944). No. 2.

14. Coffee, J. "Occupational Realism: An Analysis of Factors Influencing Realism in the Occupational Planning of Male High School Seniors." Unpublished Doctoral Dissertation, Graduate School of Education, Harvard University, 1957.

15. Combs, A.W. And Soper, D.W. "The Self, its Derivative Terms, and Research," Journal of Individual Psychology, 13 (1957), 134-145.

16. Cronbach, Lee, J. Essentials of Psychological Testing. New York: Harper and Brothers, 1949.

17. Cronbach, L. J., and Gleser, Goldine C. "Assessing Similarity between Profiles," Psychological Bulletin, 50 (1953). 456-473.

18. Dresden, K.W. "Vocational Choices of Secondary Pupils," Occupations, 27 (1948), 104-106.

19. Engel, Mary. "The Stability of the Self-Concept in Adolescence," Journal of Abnormal and Social Psychology, 59 (1959), 211-215.

20. Erikson, Erik. Childhood and Society. New York: Harper and Brothers, 1951.

21. Forer, B.R. "Personality Factors in Occupational Choice," Educational and Psychological Measurements, 13 (1953), 361-366.

22. Freeman, Frank S. Theory and Practice of Psychological Testing. New York: Henry Holt Co., 1956.

23. Gilinsky, Alberta S. "Relative Self-Estimate and the Level of Aspiration, " Journal of Experimental Psychology, 38 (1949), 256-259.

24. Ginzberg, E. Ginsburg, S.W., Axelrad, S., and Herma, J.I. Occupational Choice: An Approach to a Theory. New York: Columbia University Press, 1951.

25. Guilford, J.P. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill Book Co., 1956.

26. Holt, R.R. "The Accuracy of Self-Evaluation: its Measurement and some of its Personological Correlates," Journal of Consulting Psychology, 15 (1951), 95-101.

27. Johnson, D.G. "Effect of Vocational Counseling on Self-Knowledge," Educational and Psychological Measurements, 13 (1953), 330-338.

28. Johnson, Palmer O. Statistical Methods in Research. New York: Prentice-Hall, Inc., 1950.

29. Kaplan, O. "Age and Vocational Choice," Journal of Genetic Psychology, 68 (1946), 131-134.

30. Klein, G.S. "Self-Appraisal of Test Performance as a Vocational Selection Device," Educational and Psychological Measurements, 8 (1948), 69-84.

31. Korner, A.G. "Origin of Impractical or Unrealistic Vocational Goals," Jorunal of Consulting Psychology, 10 (1946), 328-334.

32. Lindquist, E.F. Design and Analysis of Experiments in Psychology and Education. Boston: Houghton Mifflin Co., 1956.

33. Matteson, R.W. "Self-Estimates of College Freshmen," Personnel and Guidance Journal, 34 (1956), 280-284.

34. McNemar, Quinn. Psychological Statics. New York: John Wylie & Sons, 1957.

35. Norton, J.L., and Kuhlen, R.G. "The Development of Vocational Preferences as Revealed in Vocational Histories Obtained by Interview," American Psychologist, 5 (1950), 596.

36. Odell, C.W. A First Course in Statics. Dubuque, Iowa: William C. Brown Co., 1957.

37. O'Hara, R.P., and Tiedeman, David V. "Vocational Self-Concept in Adolescence," Journal of Counseling Psychology, 6 (1959), 292-301.

38. Ree, Anna. The Psychology of Occupations. New York: John Wiley & Sons, 1956.

39. Rogers, C.R. Client-Centered Therapy. Boston: Houghton Mifflin, 1951.

40. Rosenberg, M. Occupations and Values. Glencoe, Illinois: The Free Press, 1956.

41. Russell, D.H. "What does Research say about Self-Evaluation?" Journal of Educational Research, 46 (1953), 561-571.

42. Schulman, J. "A Comparison between Ninth and Twelth Grade Students on Self-Estimates of Abilities and Objective Scores on the Differential Aptitude Tests." Unpublished Doctoral Dissertation. New York University, 1955.

43. Singer, S.L. and Stefflre, B. "Analysis of the Self-Estimate in the Evaluation of Counseling," Journal of Counseling Psychology, 4 (1954), 252-255.

44. Snygg, D., and Combs, A.W. Individual Behavior: A New Frame of Reference for Psychology. New York: Harper, 1949.

45. Stubbins, J. "Lack of Realism in Vocational Choice," Occupations, 26 (1948), 410-418.

46. Super, D.E. Appraising Vocational Fitness. New York: Harper and Brothers, 1949.

47. _____. "A Theory of Vocational Development," American Psychologist, 8 (1953), 185-190.

48. _____. "Experience, Emotion and Vocational Choice," Occupations, 27 (1948), 23-28.

49. _____. The Psychology of Careers. New York: Harper & Brothers, 1957.

50. _____. "Vocational Adjustment implementing a Self-Concept," Occupations (November, 1951).

51. _____. "Vocational Interest and Vocational Choice: Present Knowledge and Future Research in their Relationships," Educational and Psychological Measurements, 7 (1947), 375-383.

52. Symonds, Percival M. The Ego and the Self. New York: New York: Appleton, 1951.

53. Terrance, E.P. "Self-Concepts and their Significance in the Learning and Adjustment of College Freshmen." Unpublished Doctoral Dissertation, University of Michigan, 1951.

54. Williamson, E.G. "Scholastic Motivation and the Choice of a Vocation," School and Society, 46 (1937), 353-357.

55. Wrenn, C.G. "The Self-Concept Counseling," Journal of Counseling Psychology, 5 (1958), 104-109.

56. Wylie, Ruth C. The Self-Concept. Lincoln: University of Nebraska Press, 1961.