AN INVESTIGATION OF THE EFFECT OF A LEARNING PROGRAM CONSISTING OF GROUP GUIDANCE AND INDIVIDUAL COUNSELING ON THE REALISTICNESS AND DESIRABILITY OF CHOICES OF EIGHTH GRADE STUDENTS

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CHAPTER I

THE PROBLEM, DEFINITIONS AND LIMITATIONS

I. INTRODUCTION

> It would seem helpful in making adjustments to have an understanding of human behavior as it occurs in family and social relationships including especially a knowledge of the many explanations that may underlie a given form of behavior, how various behavior patterns develop and how one can meet a situation when only an approximate indication of the real motive is available.[1]

In our democratic society today youth is faced with the conflict of choice perhaps more than at any other time in our history. With the increase in automation and the decrease in unskilled and semi-skilled employment opportunities available, higher education becomes increasingly important as our culture advances. Along with progress and the greater emphasis on improvement of our educational structure we find academic standards higher and a lag between the number desiring to continue their education and available facilities and personnel required for formal education, the former exceeding the latter. This intensifies the challenge which education faces at a moment in our history when it would seem that to keep pace

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[1]Mildred I. Morgan and Ralph Ojemann, "The Effect of a Learning Program Designed to Assist Youth in an Understanding of Behavior and Its Development." Child Development, XIII, 181.

with the advances of our world neighbors we must continue to resolve the conflicts which are brought on by technological advancement and cultural lag. In so doing, we must take care to extrapolate on present trends so that we can at least partially prepare our youth for the fates which await them. These trends make it increasingly apparent that vocational counseling, or whatever we choose to label vocational education, cannot wait until senior high school or college years. Thus this study evolved in an effort to find a more satisfactory solution to problems created when curricular choices are sought from a group of eighth students, to help these young people to make more realistic decisions compatible with the many variables affecting these choices.

Because of the nature of our secondary school structure, eighth grade students must make curricular and tentative vocational decisions at a time when it seems they are least able to do so adequately. This study was therefore conducted in an attempt to discover whether a learning program designed to illuminate the variables which affect an individual's curricular decisions would be influential in aiding the pupil in making more realistic choices.

II. THE PROBLEM

Purpose of the study.--The purpose of this study was to determine whether a learning program would modify the curricular and vocational choices of eighth graders. This study therefore attempted to ascertain whether efforts made by the school would

either directly or through modification of the other variables, influence curricular choice.

Need for the study.--How adequate are present practices in helping eighth graders with their educational planning? In order to answer this question, the following procedure was devised. The cumulative record folders of 152 sophomore students were examined, including only those who had been part of the school body during their eighth grade year. The following observations were made as a result of this procedure. All freshmen are required to elect either algebra or general math; approximately forty-six per cent of this 1959-'60 freshman class who elected Algebra I failed in their pursuits, obtaining either a D or U (unsatisfactory or failing) grade in the course. Similarly, 54 per cent of this freshman class elected a foreign language and thirty-five per cent of these students failed.

As a result of the above observations, it seemed that such large percentages of failures could perhaps be avoided in academic electives if an organized curricular guidance program were available for eighth grade students.

The study therefore was designed on the basis of the research question: Will students who have been exposed to a series of "learning experiences" consisting of counseling interviews and group discussion periods in which the variables affecting curriculum and vocational choice are discussed, make more realistic choices than a control group which is not exposed to the learning program?

The study was attempted in the hope that the findings would be of value to students facing curricular decisions and for teachers and counselors in helping students in their selection of elective courses and curricula.

The research sub-questions.--Primary sub-questions considered in this study were:

1. Do students change their curricular choices as a result of a learning program?

2. Will students' choices be more "realistic" as a result of a learning program?

Methods used to assess change and reality of choice have been described in Chapter III.

III. DEFINITIONS OF TERMS

1. Achievement--as measured by the California Achievement Test, Form BB, Intermediate; the reading, arithmetic and language sub-test scores were considered separately in this study.

2. Curricular choices--selection of General Education, Business Education, or the College Preparatory course of study, the only three courses of study offered by Whitehall Yearling High School.

3. Electives--those courses selected by students which are not included in the list of basic requirements of all freshmen. The courses which are required of all students are: (1) General Science, (2) English I, and (3) Physical Education. Algebra I

and General Math were considered as elective courses since the students had the opportunity to choose either one.

4. Interests--the vocational areas of preference as measured by the Kuder Preference Vocational Interest Inventory: (1) Outdoor, (2) Mechanical, (3) Computational, (4) Scientific, (5) Persuasive, (6) Artistic, (7) Literary, (8) Musical, (9) Social Service, and (10) Clerical.

5. Learning program--a series of counseling sessions and group discussion periods in which the variables influencing curricular and vocational choice were of prime consideration.

6. Mental ability--scholastic aptitude as measured by the California Mental Maturity Test, Junior High Level, 1957 S-Form.

7. Realistic choices--this term was used to designate whether curricular and vocational selections made by the students in both experimental and control groups were in line with their ability, achievement and interests.

8. Variables influencing curricular and/or vocational choices--those traits associated with the individual himself including mental ability, interests, personality, values, and maturity level at the time a curricular decision is reached and those characteristics of the "reality-setting", the environment, which influence one's vocational and curricular decisions such as the home situation, economic and cultural status of the home, the effect of the peer group and the school situation.

IV. LIMITATIONS OF THE STUDY

The sampling of sixty students, thirty in each group, was too small to insure that the results could be generalized to the population at large. Another limitation was the unknown validity of some of the measuring devices. The period of time selected for the study, approximately four weeks, was of short duration and did not allow for follow-up of the sample; a follow-up of the success or failure the sample experienced would have been an interesting culmination to the study.

V. ORGANIZATION OF THE REMAINDER OF THE THESIS

Chapter II contains a selected review of the literature including a discussion of foremost theories in the area of vocational choice and empirical findings on the variables which affect curricular and vocational choice.

Chapter III contains a description of the procedure for the study including a description of the experimental plan, the learning program administered to the experimental group, information about the sample and statistical methods.

Results of the study and interpretations are found in Chapter IV.

Chapter V includes a summary of the findings, conclusions, and recommendations for further study.

CHAPTER II

REVIEW OF RELATED LITERATURE

I. GENERAL PRINCIPLES AND THEORIES

Some of the foremost theorists in the field of occupational choice will be considered initially in this review of the literature. A discussion of some of the empirical findings which are significant to this study will also be set forth in the latter part of this chapter.

Variables influencing vocational choice

The variables influencing vocational or curricular choice can be classified into two major areas. The first encompasses those variables associated with the individual himself and a realistic appraisal of his mental ability, interests, personality, values, and his maturity level at the time a vocational decision is reached. Carter states that "all factors relevant to learning, maturation, and development in general have a bearing on the development of vocational interests."[1]

Carter feels that "In the development of vocational attitudes the young man or woman is attempting a practical adjustment to environmental conditions."[2] But there are external realities such as the home environment, the effect of family members, the

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[1]H. D. Carter, "The Development of Vocational Interests," Journal of Consulting Psychology, IV (Nov., 1940), pp. 185-191.

[2]Ibid. p. 185.

peer group and economic and social status which modify the avenues which are open to the individual. These external realities compose the second major group of variables which influence vocational choice. Some of these factors are within the individual's grasp to understand while others are beyond his conscious grip with reality because of their subjectivity and, according to Carter, may only be evident to an unbiased observer.

The school situation is another impinging factor influencing career choice and attitudes. According to Peters and Farwell, "The influence of the school upon career choice is affected through the selective character of our educational system."[3] One educational decision influences forthcoming decisions, each casting "limiting dimensions" on the possibilities open to the individual. Thus education in essence becomes largely an irreversible process; once one embarks on one path, impinging factors make it increasingly difficult to turn back. Chance plays a significant part in occupational decision; Peters and Farwell caution that since career choice is a developmental process, we must not place undue importance on measurement devices that seem to peg individuals into certain classifications which are not meant for them.

In summary, then, the variables influencing vocational choice are those which inhere in the individual himself, such as mental

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[3]Herman Peters and Gail Farwell, "Career Choice by Chance or Plan." American Vocational Journal, XXXI. (May, 1956) p. 24.

ability, interests, personality, values and maturity level; and those factors which reside in the reality setting, such as the home environment, its cultural and economic level, the effect of individuals in the home, the influence of the peer group and the school situation.

How these variables influence vocational choice

The basis for theory of occupational choice depends to a large extent on the theorists' own beliefs concerning the development of personality in general. Some feel that vocational choice is a developmental process just as is personality which continues throughout the life-span of the individual. Super, for example, is an advocate of the developmental theory. Others feel that a more static theory is desirable--that the basis for personality is laid early in life and that one seldom deviates from this pattern in making later decisions. Darley might be classified as one who adheres to this latter viewpoint.

Bertram Forer indicates that vocational choice is "...not primarily rational or logical but is somewhat a blind, impulsive, emotional, and automatic process and is not always subject to practical and reasonable considerations."[4] Forer feels that the reasons an individual selects one rather than another occupation are not in the realm of consciousness, and the individual is not

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[4]Bertram B. Forer, "Personality Factors in Occupational Choice," Educational and Psychological Measurement, 13:361-66 (Autumn, 1953), 365.

able to explain with any depth as to how the choice was derived. Choice or lack of choice according to Forer is a facet of basic personality organization. Occupational choice can and should, he says, satisfy basic needs. The attribution of vocational selection to the individual's genetic history is a basic component of Forer's theory.

One's sex, according to Cass and Tiedeman,[5] has an important influence on curriculum choice. This theory has its origin in the idea that cultural roles largely determine what one does or does not do in society. Anne Roe mentions the roles of biological and cultural determinants in setting the patterns for occupational selections.[6] She states that one must work to satisfy basic biological needs. Our culture emphasizes the value of doing a good day's work, and the bulk of our nation values work. Roe also emphasizes how our social class organization influences what one will do in life and how minority group status, for example, limits the possibilities open to an individual. Thus, occupational choice is dependent on cultural factors quite as much as on personal variables.

In Oscar Kaplan's opinion, the development of vocational interests is due to the interaction of cultural and biological factors rather than to either alone. In his research on age and

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[5]J. C. Cass and D. V. Tiedeman, "Vocational Development and the Election of a High School Curriculum", Personnel and Guidance Journal, 38:538-45, (March, 1960), p.540.

[6]Anne Roe, The Psychology of Occupations, (New York: John Wiley and Sons, Inc., 1956), p.33.

vocational choice, Kaplan finds that "The age at which a final decision is reached in the matter of occupation varies from individual to individual and is influenced by such variables as the person's intelligence, socio-economic status of parents, sex, presence or absence of adult guidance, prevailing economic conditions, and the availability of vocational information."[7] Merely because one appears to be interested in a vocational area is not adequate basis to infer that the interest is of an enduring nature. Kaplan has found that the correlation between vocational choice and vocational preference is far from perfect due to the competitive structure of our occupational system. Therefore those who are less capable are often forced into lines of work for which they have no especial preference. "Stability of vocational interest and choice beyond the age of twenty-five," according to Kaplan, "may be attributed to such factors as psychological inertia, to social obligations which make it difficult if not impossible for a person to change his work, and to limitations imposed by background."[8] He feels that the "psychological factors involved in vocational choice can be isolated, measured, and acted upon long before age 8, provided there is more school and home emphasis on the problem of selecting an occupation."[9] The reason attributed to the usual

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[7]Oscar J. Kaplan, "Age and Vocational Choice," Journal of Genetic Psychology, LXViii (March, 1946), 131-133, p. 131.

[8]Ibid., p. 133.

[9]Ibid., p. 133.

delay in vocational decisions is that young people are not ordinarily forced to do so earlier.

In somewhat agreement to Kaplan's findings concerning age and reality of choice is the work of Jersild. According to Jersild, "Human beings from an early age have more capacity for learning to face and to understand and to deal constructively with the realities of life than we have hitherto assumed in our psychological theories or in our educational practices."[10]

In contrast to many advocates of vocational guidance, A. A. Brill believes that vocational counseling is unnecessary because a normal individual will usually "sense" what vocation is best for him. Brill[11] has developed a psychoanalytic vocational theory which attributes "success" to a psychic determinant which lays the foundation for a vocation early in childhood. The individual is unconsciously guided toward this vocation as long as nothing interferes with this psychic determinant. Thus vocational selection according to this theory is a form of sublimation which the individual expresses in his vocational selection.

Realistic choices, says Caplow,[12] occur when the individual makes what might be termed a compromise between one's early aspirations and more limited objectives. By "realistic", it appears

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[10]Margaret E. Bennett (citing Jersild) Guidance in Groups, New York: McGraw-Hill Book Company, 1955, p. 168.

[11]A. A. Brill, Basic Principles of Psychoanalysis, (New York: Harper and Brothers, 1949).

[12]T. Caplow, The Sociology of Work, (Minneapolis:University of Minnesota Press, 1954).

that he means making a choice in terms of variables that involve a sort of reality testing. He also attributes the development of vocational choice to such factors as error and accident, parental influence, and the result of school requirements that pressure the individual into making a decision while he is still remote from the "world of work".

Robert Hoppock has developed the following theory of occupational choice, the basis of which is need satisfaction.

1. Occupations are chosen to meet needs.
2. The occupation that we choose is the one that we believe will best meet the needs that most concern us.
3. Needs may be intellectually perceived, or they may be only vaguely felt as attractions which draw us in certain directions. In either case they may influence choices.
4. Occupational choice begins when we first become aware that an occupation can help to meet our needs.
5. Occupational choice improves as we become better able to anticipate how well a prospective occupation will meet our needs. Our capacity thus to anticipate depends upon our knowledge of ourselves, our knowledge of occupations, and our ability to think clearly.
6. Information about ourselves affects occupational choice by helping us to recognize what we want, and by helping us to anticipate whether or not we will be successful in collecting what the contemplated occupation offers to us.
7. Information about occupations affects occupational choice by helping us to discover the occupations that may meet our needs, and by helping us to anticipate how well satisfied we may hope to be in one occupation as compared with another.
8. Job satisfaction depends upon the extent to which the job that we hold meets the needs that we feel it should meet. The degree of satisfaction is determined by the ratio between what we have and what we want.
9. Satisfaction can result from a job which meets our needs today, or from a job which promises to meet them in the future.
10. Occupational choice is always subject to change when we believe that a change will better meet our needs.[13]

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[13]Robert Hoppock, "A Theory of Occupational Choice," The Vocational Guidance Quarterly, No. 4 (1957), 152.

Donald E. Super has done much theorizing in the area of vocational development. He views vocational development as the implementation of a self-concept. If one cannot be "himself" in his work, it is quite likely that his adjustment will not be good. "Role-playing is therefore a means of self-realization, just as it is a means of self-exploration."[14] Super goes on to say that "People gravitate toward occupations which are appropriate to their abilities, and persons who have too much ability for their jobs tend to leave them for more demanding work, i.e., work which requires them to take a role more in keeping with their abilities."[15] He cites a study in which Brophy has shown, "That when the imposed occupational role (role expectations) differs from the self-concept (the role aspirations) the individual is likely to dislike his occupation."[16]

Bordin suggests that "No doubt, the reason that Super chose the term 'development' rather than 'choice' was to emphasize the fact that this (vocational decision) is not something that is a discreet event--something that takes place at a particular point in time--but rather that what we are talking about is a continuous process, something that starts quite early and presumably develops,

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[14]Donald E. Super, "Vocational Adjustment in Terms of Role Theory," Vocational Guidance Quarterly, No. 4 (1957) p. 139.

[15]Ibid., p. 140

[16]Ibid., p. 140

changes, and is not fixed."[17] The development of vocational choice is an integral part of personality development. Bordin feels that we cannot separate these processes--that vocational development and personality development are interwoven. He stresses that one quite naturally selects an occupation which will allow him to express himself and his feelings in the manner in which he is used to. According to Bordin, "A critical point as far as the development of vocational choice is concerned is the adolescent period."[18]

Two kinds of factors in the process of vocational choice delimit the possibilities open to the individual. One, Bordin asserts, is "...the reaction to one's models--identification--to one's models--as a source of the values, as a source of choosing the place in the world that one is going to fill."[19] The second kinds of factors are "...the ways the individual develops and works out the modes in which he is going to express his feelings....[and] the ways in which he has to curb them [which] correspond to the kinds of activities that are demanded in various kinds of occupations."[20]

The basis for Super's career pattern theory rests in the statement, "To understand what an individual will do in the future

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[17]Edward S. Bordin, "Factors Influencing Vocational Choice," Teachers College Journal, 28:33-7 (Dec., 1956), p. 33

[18]Ibid., p. 34.

[19]Ibid., p. 34.

[20]Ibid., p. 34.

one must understand what he did in the past."[21]

The life history method can best be described as extrapolation based on thematic analysis of what one has done in the past; one's past behavior is analyzed to note the sequence of events and the development of characteristics. This method differs from the trait matching technique in that predictions of the individual's future behavior are based on his past actions rather than on what others do with similar traits. Super points out that "effective vocational counseling needs to, and often does, make use of both traits and pattern theories."[22]

Bordin has developed a basic theory of vocational interests as dynamic phenomena based on the Strong Vocational Interest Test. His theory, in essence, expresses the idea that in answering a Strong, an individual is expressing his acceptance of a particular view or concept of himself in terms of occupational stereotypes. Bordin clarifies this basic assumption with the following two corollaries:

> The degree of clarity of an interest type will vary positively with the degree of knowledge of the true occupational stereotype.
> The degree of clarity of an interest will vary positively with the degree of acceptance of the occupational stereotype as self-descriptive.[23]

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[21]Donald E. Super, "Career Patterns as a Basis for Vocational Counseling," Journal of Counseling Psychology, Vol. I, No. 1, (1954), p. 13.

[22]Ibid. p. 16.

[23]Edward S. Bordin, "A Theory of Vocational Interests as Dynamic Phenomena," Educational and Psychological Measurement, 3:49-66 (Spring, 1953) p. 54.

The latter corollary is based on two further assumptions: (1) that the occupational stereotype implicit in the Strong Blank are true stereotypes, and (2) that all of the occupations can truly be stereotyped.

Findings of a study conducted by Bordin in substantiation of this theory are presented in Part II of this chapter.

Super contends that the elements of an adequate theory of vocations emphasizes vocational development rather than vocational choice and includes the concepts of preference, choice, entry and adjustment. His theory of vocational development is as follows:

1. People differ in their abilities, interests, and personalities.
2. They are qualified, by virtue of these characteristics, each for a number of occupations.
3. Each of these occupations requires a characteristic pattern of abilities, interests, and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupation.
4. Vocational preferences and competencies, the situations in which people live and work, and hence their self-concepts, change with time and experience (although self-concepts are generally fairly stable from late adolescence until later maturity), making choice and adjustment a continuous process.
5. This process may be summed up in a series of life stages characterized as those of growth, exploration, establishment, maintenance, and decline, and these stages may in turn be subdivided into (a) the fantasy, tentative, and realistic phases of the exploratory stage, and (b) the trial and stable phases of the establishment stage.
6. The nature of the career pattern (that is, the occupational level attained and the sequence, frequency, and duration of trial and stable jobs) is determined by the individual's parental, socio-economic level, mental ability, and personality characteristics, and by the opportunities to which he is exposed.
7. Development through the life stages can be guided, partly by facilitating the process of maturation of abilities and interests and partly by aiding in reality testing and in the development of the self-concept.

8. The process of vocational development is essentially that of developing and implementing a self-concept: it is a compromise process in which the self-concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of the role playing meet with the approval of superiors and fellows.
9. The process of compromise between individual and social factors, between self-concept and reality, is one of role playing, whether the role is played in fantasy, in the counseling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.
10. Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate.[24]

II. EMPIRICAL FINDINGS

The variables affecting curricular and vocational choice

Cass and Tiedeman express the idea that "although we tend to consider occupational interests unstable in the early high school period, this ordinarily means only that they are but slightly predictive of occupation after high school. This study suggests that they are effective predictors of the election of a high school curriculum. They are dynamic factors in that choice."[25]

In a study of patterns of vocational interest development, Joseph Norton concluded that preferences are expressed from the age

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[24]Donald E. Super, "A Theory of Vocational Development," The American Psychologist, 8:185-190, (May, 1953) pp. 189-190.

[25]J. C. Cass and D. V. Tiedeman, "Vocational Development and the Election of a High School Curriculum," Personnel and Guidance Journal, 38:538-45, (March, 1960), p. 543.

of three on throughout high school.[26] In general, he found that interests tend to become slightly more realistic with age. Changes in interests may be brought about with extended effort in counseling, guidance, or orientation classes but there is no guarantee that such effort will be effective.

Forrest Orebaugh derived the following conclusions from a study of the elements involved in the vocational choices of ninth grade students.[27] (1) Although a majority of students are familiar with a wide range of occupations, they tend to select from a very narrow range; (2) students have difficulty distinguishing among the various occupational levels except between the white collar and manual occupations; (3) a majority of students tend to select occupations which are above their mental ability level.

William McGowan found that junior high schod students have a wide and fairly serious acquaintance with many vocations. He concluded that these varied interests illustrate the increasing complexity of our society. According to McGowan, the home and school are major sources of happiness and unhappiness for young people.[28]

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[26]Joseph L. Norton, "Patterns of Vocational Interest Development and Actual Job Choice," Journal of Genetic Psychology, 82:235-62, (June, 1953).

[27]Forrest Elton Orebaugh, "Elements Involved in the Vocational Choices of One-Hundred Four Ninth Grade Students," (Unpublished Master's Thesis, Ohio State University, 1959) p. 23-24.

[28]W. M. McGowan, "Problems and Ambitions of Junior High School Students," The Nation's Schools, 55:98-9 (Feb., 1955).

Anne Roe mentions a study in which "Brown and Ghiselli analyzed the results of 127 studies and reported that there was no certainty that a test which would predict a worker's ability to learn a job, would also predict how well he would do the job when trained,"[29] "This," Roe stresses, "emphasizes again the fact that much more is involved in occupational selection and success than aptitudes."[30]

Fleege and Malone, writing from a value-oriented framework, found that the post war era (that is, World War II) may have influenced the findings of their study on motivation in the choices of junior and senior high school students. They concluded that a large percentage of adolescents chose occupations beyond their mental capacities. Nursing and engineering, two jobs in great demand at the time for girls and boys respectively, were found to be popular choices among the sample investigated. Fleege and Malone also found that differences between choices from junior to senior high school did not seem to be striking.[31]

Lehman and Witty concluded the following in their study of vocational attitudes as related to pubescence.

> It is sometimes asserted that interests are symptomatic of ability. Ability is usually conceived as inherent

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[29]Anne Roe, op.cit., p. 74.

[30]Ibid.

[31]Urban H. Fleege and Helen J. Malone, "Motivation in Occupational Choice among Junior-Senior High School Students," Journal of Educational Psychology, V. 37:77-86, (Feb., 1946).

> capacity, i.e., capacity inborn and unchangeable. If the latter conception of ability be adhered to, the hypothesis that interests are symptomatic of ability postulates the additional hypothesis that interests do not change. If, however, the written expression of intention to enter a given vocation be regarded as an expression of interest, it is obvious that the interests of the children herein studied cannot be symptomatic of their abilities, for the interests of these children are found to change markedly during the pubescent period.[32]

There is a commonality among students in the perception of occupational groupings according to Willa Grunes. She cites that "despite the wide agreement on job clusters, students of different status do tend to perceive somewhat different job worlds....These class differences in perception lead, as one might expect, to class differences in vocational desires."[33] Grunes stresses that students need help in realistic perception; counselors and vocational teachers should help these students to differentiate among vocational aspirations, the job one is "really trying for", and the job one "expects to get". She also found that "when our subjects listed the barriers which might prevent them from attaining their vocational goals, they often named barriers which will almost certainly occur in the lives of most of them."[34]

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[32]H. C. Lehman and P. H. Witty, "A Study of Vocational Attitudes in Relation to Pubescence," American Journal of Psychology, XLIII, (Jan., 1931), 101.

[33]Willa F. Grunes, "On Perception of Occupations," Personnel and Guidance Journal, 34:276-9, (Jan., 1956), p. 277.

[34]Ibid. p. 279

How vocational selection is influenced by variables inherent in the self and the environment

In his study on "Personality Determinants of Vocational Choice", Leonard Small found that adolescent boys with emotional disturbances are less realistic in their vocational choices than are better-adjusted adolescents. His findings indicated that "the greater the departure from reality, the stronger is the operation of fantasy."[35] Small also concluded that "the vocational choices of better-adjusted boys are characterized by fantasies that emphasize participation in and involvement with the environment and its inhabitants and objects....while the vocational choices of disturbed boys are characterized by fantasies that emphasize removal from others and the environment, self-depreciation, and the acting out of impulses."[36] While Small's findings indicated that compromise does play an important part in vocational choice, there were no indications that vocational choice is a developmental process. The implications of this study according to Small is that "vocational counseling, emphasizing as it does realistic factors, is best able to benefit the realistically oriented individual".[37]

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[35]Leonard Small, "Personality Determinants of Vocational Choice," Psychological Monographs, 67:1-21, 351, (1953), p. 4

[36]Ibid. p. 16.

[37]Ibid. p. 17.

Moser found a positive correlation between vocational preferences and mental ability; he compared vocational selections with mental ability scores from the Henmon-Nelson with A.G.C.T. scores in the Examiners' Manual listed for 125 occupations. In so doing, Moser concluded that "vocations which require advanced professional training are generally selected by the students with high mental abilities, while occupations which require little or no academic training are selected by students who have relatively lower mental abilities. It would seem, therefore, that the oft-stated conclusion that high school students when undirected tend to select vocations far above their mental abilities is not substantiated by these findings."[38]

According to Schmidt and Rothney, "occupational choices of tenth grade secondary students are more stable than previous literature in this area indicates."[39] They feel furthermore that one cannot make an accurate prediction of performance on the Primary Mental Abilities Test on knowledge based on the Henmon-Nelson or vice-versa.

Schmidt and Rothney also conducted a study on variability of vocational choices using high school students as a sample. They found "that variability rather than consistency of vocational

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[38]W. E. Moser, "Vocational Preference as Related to Mental Ability," Occupations, 27:460-1, (April, 1949), p. 461

[39]L. G. Schmidt and John W. Rothney, "Primary Mental Abilities and Occupational Choices," Journal of Educational Research, 47:297-300, (Dec., 1953), p. 300.

choice is the rule for the majority of counseled high school youth,"[40]

"It appears that planning cannot be a 'one-shot' process for all high school youth,"[41] according to these researchers. "For consistent students, vocational choices may have real meaning worthy of consideration and importance in planning school programs. For others, they represent only statements that need much consideration at later dates."[42]

"Interesting experience (as a job value) is significantly and positively related to adolescence,"[43] according to the findings of Singer and Stefflre in their research. Adults, as contrasted with adolescents, are more concerned with independence as a vocational value; adolescents desire high pay and fame as worthy attributes of vocational selections. In summary, Singer and Stefflre concluded that job values and desires do vary with age. They suggested "that adolescents exhibit certain culturally determined stereotypes toward jobs that change with the acquisition of stable adult work experience."[44]

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[40]John L. Schmidt and John W. Rothney, "Variability of Vocational Choices of High School Students," Personnel and Guidance Journal, 34:142-46, (Nov., 1955), p. 146.

[41]Ibid. p. 146.

[42]Ibid. p. 146

[43]Stanley L. Singer and Buford Stefflre, "Age Differences in Job Values and Desires," Journal of Counseling Psychology, Vol. I, No. 2, (June, 1954), p. 90.

[44]Ibid. p. 91.

In one study, Stephenson found that most ninth graders were unrealistic in their vocational choices.[45] Those who selected an occupation did so from a narrow range, a large percentage of which were professional in nature.

In another study Stephenson compared occupational aspirations of ninth graders with father's occupation and vocational needs of the community. The findings of this study indicated the plans of ninth graders "more nearly reflect the occupational structure than their aspirations."[46]

Stephenson, like Grunes, feels that this result "suggests the necessity of differentiating between plans and aspirations in studies concerned with youths' vocational orientation and is particularly pertinent in assessing degree of realism of choice."[47] Stephenson's data also seems to support Grunes' findings on the relationship between vocational plans and socio-economic position. He concludes that "the plans are considerably more class based than the aspirations."[48] "...it appears clear," Stephenson says, "that these students as a group approach occupational planning with considerably more realism than is sometimes assumed."[49]

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[45]R. M. Stephenson, "Realism of Vocational Choice: A Critique and an Example," Personnel and Guidance Journal, 35:482-488, (April, 1957).

[46]R. M. Stephenson, "Occupational Aspirations and Plans of 443 Ninth Graders," Journal of Educational Research, 49:27-35, (Sept., 1955), p. 484.

[47]Ibid. p. 484.

[48]Ibid. p. 484.

[49]Ibid. p. 488.

In his attempts to substantiate his theory of vocational interests as dynamic phenomena based on the Strong, Bordin found that students are able to manipulate the results of the Strong in terms of their conception of the stereotype pattern of a given occupation. Bordin concluded that "the greater the knowledge of the occupational stereotype, the greater the relationship between claimed and measured interests."[50] He hypothesized that in regard to the continuity of an interest type "a change in curriculum and consequently a change in goals will probably involve an adjustment of the individual's picture of himself."[51]

Naomi Stewart gave a detailed report of her study of the relationship between civilian occupations and the A.G.C.T. in the article "A.G.C.T. Scores for Army Personnel Grouped by Occupations." There were limitations in her findings "because of the selective effect of deferments, rejections, and discharges, the Army population representing any given occupation was not the same as the total civilian population for that occupation."[52] Since A.G.C.T. scores were not available for officers this also tended to make distributions for some occupations less representative of their counterparts in the civilian population.

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[50]Bordin, Op. cit., p. 61.

[51]Ibid. p. 61.

[52]Naomi Stewart, "A.G.C.T. Scores for Army Personnel Grouped by Occupations," Occupations, XXVI, No. 1, (1947), pp.5-41, p.28.

Stewart also mentioned the possibility of coding errors as another limitation when one interprets the findings of her study.

She concludes from these findings that: (1) there is a clear occupational hierarchy; (2) (with respect to regional differences) "all such differences which are sufficiently sizeable to be statistically significant show higher medians for northern than for southern samples;"[53] (3) (with respect to counseling implications) "the more restricted the range of A.G.C.T. scores for a given occupation, the more important a part does verbal and numerical ability play in that occupation. The less restricted the range, the greater the relative importance of factors other than ability of the verbal and numerical sort."[54] (4) "A test like the A.G.C.T. by itself can furnish no positive guidance toward any one occupation or toward any narrow zone of occupations."[55]

Harrell and Harrell found in their research on the A.G.C.T. that "evidently a certain minimum of intelligence is required for one of many occupations and a man must have that much intelligence in order to function in that occupation, but a man may have high intelligence and be found in a lowly occupation because he lacks other qualifications than intelligence."[56]...."Since the

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[53]Ibid. p. 38.

[54]Ibid. p. 38.

[55]Ibid. p. 38.

[56]Thomas W. Harrell and Margaret S. Harrell, "A.G.C.T. Scores for Civilian Occupations," Educational and Psychological Measurement, V. No. 3., (1945), pp.229-239, p. 239.

GCT is a measure of ability to manipulate words, numbers and space relations, it is to be expected that those occupations with the lowest averages on the list are likewise the occupations least concerned with words, numbers, or space relations."[57]

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[57] Ibid., p. 239.

CHAPTER III

PROCEDURES

Introduction.--The research question considered in this study can be summarized as follows: Will students who have been exposed to a series of "learning experiences" consisting of counseling interviews and group discussion periods in which the variables affecting curricular and vocational choice are discussed make more realistic choices than a control group which is not exposed to the learning program?

In Chapter III, is included a description of (1) the development of the learning program; (2) the administration of the learning program; (3) information about the sample including a discussion of controlled and criterion variables; and (4) the statistical method utilized to measure change toward realistic choices.

I. DEVELOPMENT OF THE LEARNING PROGRAM

Several factors influenced the decision to set up this experimental study and the learning program. One of the basic reasons for establishing the type of program which was selected was the hypothesis that eighth graders are not adequately prepared to select their high school programs. This contention, conceivably, was borne out by the large numbers of failures in ninth grade elective courses and the changes in courses and curricula which

such failures necessitated. The type of learning program which evolved in this study was largely a result of investigations of the research previously done in guidance and allied areas. Although there is an unfortunate lack of published and unpublished research in the junior high school vocational guidance area, three other studies which were investigated produced the ideas for this particular piece of research.

It was from an investigation of Ralph Ojemann's work that the idea of setting up a learning program for the experimental group was derived. If the pupils in the experimental group were familiar with the factors influencing them, and through the processes of counseling and discussion this learning was internalized, would they not have greater control over their actions?

Secondly, William Heath's study of the "Factors Influencing the Vocational Choices of Senior High School Students" laid the basis for the learning program. And lastly, Forrest Orebaugh's findings on elements involved in the choices of one-hundred-four ninth grade students raised the hypothesis that a learning program would modify these choices.

The program of learning was devised so as to present to the students in the experimental group a knowledge of the variables affecting their curricular choices in as simplified a manner as possible in order to isolate precisely what was done to this group that may or may not have been done to those in the control group.

All that was given to the experimental group was an explanation of the variables affecting their choices and an opportunity to discuss these variables in group and individual counseling sessions. No coercion or pressure was exercised in any way to yield what might seem to be more favorable results pertaining to the study in either the counseling sessions, the discussion periods or the final scheduling of the curricular choices and electives. The students in both the experimental and control groups were not notified that a study was in progress or that they were taking part in such a study so as to minimize what is termed the "Hawthorne Effect" in influencing the results. There is however some question as to whether or not the control group might have guessed that they were taking part in a study of some sort because of the nature in which the members of this group was selected.

In talking with the students of the experimental group in the counseling interviews, non-directive techniques were utilized. The combination of individual counseling and group guidance techniques was used so that each method could reinforce the other in getting the ideas incorporated in the learning program across.

The experimental group was allowed complete freedom of choice in their selections of courses and curricula; they were bound only by those restrictions set down by the school administration. In cases where their choices conflicted with these restrictions, the administration did not contest these choices if parental consent was obtained. In summary, then, the learning program

consisted of (1) group discussion of the variables affecting curricular choice; (2) one counseling interview (two in some cases) in which the vocational plans were discussed, scheduling was considered, and any other factors which might be pertinent to the selection of a curriculum were reviewed.

II. ADMINISTRATION OF THE LEARNING PROGRAM

Administration of questionnaires to both experimental and control groups.--In order to determine whether students' choices become more realistic as a result of the learning program, questionnaires were administered prior to the undertaking of the learning program to both the experimental and control groups. Similar questionnaires were administered at the end of the study to both groups in order to note similarities and differences in expressed choices. Questions concerning elective courses, curricular choice, vocational choice (if any), stated area of greatest interest, and self-appraisal of ability were included on the questionnaire. (See Appendix for copy of questionnaire).

Administration of the Kuder Preference--Vocational to both groups.--One measuring instrument was the Kuder Preference--Vocational. This measuring device was selected in part so as to compare findings with a previous study.[1] It was administered

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[1]Forrest Elton Orebaugh, "Elements Involved in the Vocational Choices of One Hundred Four Ninth Grade Students," (Unpublished Master's Thesis, Ohio State University, 1959).

to both experimental and control groups before the learning program was initiated. The control group was not informed as to the results of the Kuder. Approximately one-half of the experimental group discussed the results of this inventory in a counseling interview.

Administration of the learning program to the experimental group.--The initial part of the learning program consisted of one counseling interview for approximately one-half the experimental group and two counseling interviews for the remainder. The secondary counseling interview was optional and voluntary. Students arranged for this interview on their own time after school hours.

Four group-discussion periods comprised the second part of the learning program. In these discussion periods the main factors which influence an individual's choice of curriculum were considered as well as why an individual might yield to the pressures which these factors create, how it might be possible to avoid yielding to these pressures under circumstances which would indicate that such yielding would be unwise in view of the individual's own abilities, aptitudes, interests, and needs. Discussion Period I concerned achievement and mental ability. Discussion Period II emphasized the role of interests on curricular and vocational choice. Personality, values and maturity level were weighed in Discussion Period III. The influence of the home and its

socio-economic aspects were considered in Discussion Period IV, along with the role of the peer group and the school situation itself.

Originally, it was hoped to organize the discussion periods in such a way that it would be possible to consider each variable affecting curricular choice in a separate period of time. The nature of the experimental group in itself was a drawback to such an arrangement. Regardless of method, it wasn't possible to elicit the amount of enthusiasm or the degree of response that would make it feasible to arrange the discussion periods in such a way. As a result, what the discussion periods amounted to was a large degree of lecture and a small amount of questions. The need to consider each variable alone was eliminated under such an arrangement.

III. INFORMATION ABOUT THE SAMPLE

Controlled Variables

Selection of the experimental sample.--The experimental group comprised an eighth grade class group (self-contained) at Whitehall Yearling High School. There were thirty pupils in the experimental group. The control group contained a total of thirty children from four other self-contained eighth grade classrooms picked on a random basis except that an attempt was made to control the intelligence factor by matching the mental ability of those pupils selected for the control group with those of the experimental group.

The children for the control group were selected from different classrooms so as to control in part the effect of different teaching techniques. Sex was also a controlled variable. There were sixteen girls and fourteen boys in each group.

Mental ability.--Relative mental ability was determined by using the results of the California Test of Mental Maturity, Short Form, Intermediate, which was administered to the sample at the end of their seventh year in school. Those students new to the Whitehall School system were tested during the progress of the study.

Economic and social characteristics of the Whitehall community.--The majority of the school population can be categorized as falling into the "middle-middle" class economically as well as socially. There are, however, many members of the student body who fall into the "upper-middle" and "lower-middle" classes and fringe members who might be classified as belonging either to the upper or lower classes.

There is a large percentage of transcient students enrolled in the Whitehall schools. Many students are children of military personnel and often transfer in and out during the school year. The population on the whole, however, is becoming increasingly stable.

Size and general characteristics of the school and the system in general.--There are approximately 5,200 students enrolled in grades one through twelve in the Whitehall school system. About

1,200 students, grades eight through twelve, are housed in the Yearling Road high school building. The physical building facilities are relatively good; several of the schools in the system have been built in the last three to five years, but the population is to some extent growing faster than are the facilities to cope with it.

Summary of characteristics of the experimental and control groups.--The experimental results can be generalized to apply to a middle-class population with a range in intellectual ability based on the CTMM from superior to inferior with emphasis on the average range of intelligence. The distribution of these scores is shown on Table 1.

Definitions of Realistic Choice.--Since this study was exploratory in nature, it was decided to use many different criterion variables against which change was measured to discern if any significant changes occurred in the experimental group which did not occur in the control group and also to discover whether these measures were adequate. Seven criterion variables were established based on measurements which are described below. The seven criteria of realistic choice were: (1) congruence of curriculum selections and tested mental ability; (2) congruence of vocational selections and tested mental ability; (3) congruence of self-evaluation of mental ability and tested mental ability; (4) congruence of math course selection and arithmetic score on the CAT; (5) congruence of foreign language course selection and

TABLE 1

RANGE IN I.Q. FOR ENTIRE SAMPLE BASED ON THE CSFMMT*

I.Q.	Descriptive Classification	Portion of Typical Population Included	No. in Experimental Group	No. in Control Group	% of Experimental Group	% of Control Group
130+	Very Superior	5%	0	0	0	0
115-129	Superior	13%	8	6	27%	20%
100-114	High Average	32%	8	14	27%	47%
85- 99	Low Average	32%	12	10	40%	33%
70- 84	Inferior	13%	2	0	6%	0
69-	Very Inferior	5%	0	0	0	0
		TOTAL	30	30	100%	100%

*Elizabeth T. Sullivan, Willis W. Clark and Ernest W. Tiegs, Manual, California Short-Form Test of Mental Maturity, Junior High Level, (1957, California Test Bureau, Los Angeles), p. 13.

language score on the CAT; (6) congruence of vocational choice and choice and tested vocational interests; and (7) congruence of stated and measured interests.

Grades were not used as a criterion for realistic choice because of their arbitrary nature and the fact that it would have been difficult to compare the experimental and control groups on such a basis.

Mental ability.--Mental ability scores derived from the California Mental Maturity Test, Short Form, Intermediate were used to measure realistic choice of (1) curriculum, (2) vocations, and (3) self-evaluation of mental ability.

Mental ability was used in the following manner as a criterion to determine whether an individual's curricular preference was realistic (Criterion 1). An intelligence quotient of 115 was considered as the lower limit upon which an individual's choice of the college preparatory curriculum could be judged realistic. Choice of the general education curriculum or the general business curriculum was considered unrealistic if the individual's intelligence quotient was above 114, because an I.Q. score above 114 on the CTMM falls within the superior category. Any student, for example, with a score above 114 electing the general education curriculum would probably have rather low occupational aspirations, and probably would not be intent on utilizing his intellectual potentialities as well.

Mental ability scores along with the expressed vocational preferences of those students who had answered this item on the questionnaire were compared with Stewart's table of A.G.C.T. scores entitled "Occupational Groups Whose AGCT Medians Lie in Each Half-Sigma Interval from the Mean of All the Medians". If the student's I.Q. score did not fall within the range on Stewart's table, it was adjudged unrealistic in terms of mental ability (Criterion 2).

Usage of Stewart's table as the basis for this criterion variable to judge whether there was congruence between vocational choice and tested mental ability proved difficult. There were several reasons for this: (1) women's occupations were not included; (2) one-third the experimental group and one-fifth the control group made no final vocational choice whatsoever; (3) in several instances, individuals chose vocations below their intellectual potential but these were judged realistic insofar as these individuals would be capable of doing the work if they so desired; (4) in other instances, individuals chose vocations which were not represented on the table; in these cases, similar vocations were considered as a basis for judgment as to the desirability of the selection. Therefore, in using this criterion, the judgments were not as scientific as would seem desirable.

Self-evaluation of mental ability was compared with CTMM scores to discover whether the individual was realistic in assessing his ability (Criterion 3). The above-average range was considered as 115 and above; the average range, as 85 to 114; and the

below-average range, as 84 and below.

Achievement.--Because ability alone has been found by many investigators to be only a fraction of the basis for success in course work, it was decided to use achievement as determined by the California Achievement Test, Intermediate, Form BB, as a criterion for realistic elective course choice.

The distribution in grade placement scores for the experimental and control groups on the arithmetic and language subtests of the CAT are shown on Table 2.

Ninth grade mathematics and foreign language were selected for consideration for several reasons; among them were: (1) Algebra I or general math were considered as electives since the student must elect either one or the other; (2) Algebra I and a foreign language were two college preparatory electives, and usually the number of students who elect the college preparatory program far exceeds the number who actually attend college; and (3) non-academic electives were not included because verbal facility is not a prime requisite for success in many of them.

The following procedure was used to determine realism of elective course choice (Criteria 4 and 5). If a student scored below 9.6 (a grade placement of ninth grade, sixth month) on the arithmetic sub-test of the CAT and elected Algebra I, his choice was considered unrealistic. If he scored 9.6 or above and elected general math his choice was also considered unrealistic. In like manner, if he elected a foreign language and fell below 9.6 his

TABLE 2

EXPERIMENTAL AND CONTROL GROUPS'
CALIFORNIA ACHIEVEMENT TEST SCORES

Grade Placement	Arithmetic		Language	
	Experimental	Control	Experimental	Control
9.6 and above	14	15	9	10
8.5 to 9.5	7	10	10	14
8.4 and below	9	5	11	6
TOTAL	30	30	30	30

choice was considered unrealistic. When an individual made no choice of a foreign language this was interpreted in the following manner. If his language score on the CAT was 9.6 and above, no choice was unrealistic. If his score were 9.5 and below and he made no choice this was considered realistic.

The usage of achievement as the basis for realism of elective courses precluded the requirements of the curricula themselves. It was demonstrated from the data that choices are not unilateral in nature and this rendered the use of achievement as a criterion to be rather unsatisfactory.

Interests.--Information derived from the Kuder was utilized as a criterion in the following manner. If a student expressed a vocational preference on the questionnaire, his choice along with his inventory profile was compared with the list of occupations found in the Kuder manual. If his choice of occupation was not in an area which his profile indicated was a category of high interest, it was considered unrealistic in terms of interest (Criterion 6). If the occupations listed in the manual did not include the individual's expressed choice, the latter was compared with occupations listed in the Dictionary of Occupational Titles.

The Kuder was also used as a criterion to determine whether there was congruence between the student's stated area of greatest interest and his tested interests (Criterion 7). If the student's stated preference compared with any tested interest score above the 75th percentile it was considered realistic.

Interest scores above the 75th percentile were considered primarily because:

> "....it the [75th percentile] is a convenient point which lies between the 1% and 5% points of significance for normally distributed scores from tests having a reliability of .90. Since test reliabilities vary somewhat from group to group as well as with the method used for estimating them, there is probably little to be gained by attempting to set up separate cutting points for each scale, and there is much to be lost in convenience of interpretation. In this connection, it should be remembered that no cutting point is completely satisfactory. Scores well above the 75th percentile can be regarded with greater confidence. Those somewhat below it may deserve some consideration but must be regarded as less likely to be an expression of a true interest in the field.[2]

As suggested in the Kuder manual for utilizing data concerning one high score, two high scores, more than two high scores, and no high scores, the following procedures were used: (1) When one high score was evident, that is, over the 75th percentile, this score was compared with the occupations listed in Table I of the Examiner's manual or the Dictionary of Occupational Titles. If the student's stated preference of occupation agreed with either of the above-said lists it was adjudged realistic in terms of interest. (2) When two high scores were evident, the two scores were combined by placing the smaller number first, and this combined score was compared with the lists of occupations suggested for consideration. (3) Where three or more high scores were indicated, the authors of the manual suggested that these high scores be compared by placing the scale numbers into pairs, placing the smaller number in each pair first.

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[2]Kuder Preference Record, Examiner Manual, Vocational Form-C, Fifth Edition, (February, 1953), Science Research Associates, p. 3.

This procedure was followed and again the student's stated preference was compared with the above-mentioned lists of occupations. If any of the occupations so listed compared with the student's stated preference it was considered realistic in terms of interest. (4) Where no high scores were indicated the scores above the 65th percentile were considered.

Although low scores are significant in determining what occupations to avoid, for the sake of simplicity, these scores were not singled out as necessarily invalidating the above procedures and therefore not considered in this study.

Analyses of data in order to test statistically the research questions.--In order to compare the data compiled from the experimental and control groups on a statistical basis utilizing chi-square, the data were analyzed in two ways, each of which answered one of the two research sub-questions respectively.

Research sub-question 1 was: Do students change their choices as a result of a learning program? In order to answer this research question the data were divided into three categories: (1) More real in post than in pre-testing; (2) Equal; and (3) Less real in post than in pre-testing.

"More real" for criteria 1 through 7 was defined as: (1) movement from no choice to a realistic choice; or (2) movement from an unrealistic choice to a realistic choice. "Less real" for criteria 1 through 7 was defined as: (1) movement from no choice to an unrealistic choice; or (2) movement from a realistic

choice to an unrealistic choice. "Equal" choice was defined as (1) making the same choice in the post as in the pre-testing. This "equal" category was interpreted as meaning either making an equally realistic or an equally unrealistic selection in the post as in the pre-testing. This, therefore, involved the equating of some selections. For example, in order to clarify equality of choice for criterion 1, choice of General Business or General Education were of equal value. Although a person was considered realistic in his choice of either general business or general education if his mental ability was 114 or below, if he chose first one and then the other in the pre and post testing, his selection was categorized as falling within the "equal" column, thereby indicating no change in realisticness of choice.

Another exception was defined in terms of criterion 5; "no choice" of a foreign language in the pre and in the post testing was categorized as falling under the "equal" column; that is, there was no change in realisticness. Those who made no choice for criteria 2 and 6 were eliminated from the data for these two measures.

Categorization of selections in terms of desirability and undesirability was designed in order to answer research sub-question 2: Will students' choices be more "realistic" as a result of a learning program?

Desirable change was defined as: (1) movement from an unrealistic choice in the pre-testing to a realistic choice in the

post-testing; (2) movement from no choice in the pre-testing to a realistic choice in the post-testing; and (3) agreement between an initial realistic choice and a final realistic choice. In like manner, an undesirable choice was defined as: (1) movement from a realistic choice in the pre-testing to an unrealistic choice in the post-testing; (2) movement from no choice in the pre-testing to an unrealistic choice in the post-testing; and (3) agreement between an initial unrealistic choice and a final unrealistic choice.

In categorizing the data for criterion 5 the following exception was made. When an individual made "no choice" of a foreign language, this was considered desirable if the individual's CAT language score was 9.5 or below and undesirable if his score was 9.6 or above. In each of the other criterion variables, an individual who made no final choice was excluded from the data.

Reliability and validity of measuring instruments.--The reliability coefficients for the California Achievement Test, Intermediate Battery are: Reading--.92, S.E. Meas.--0.45, Arithmetic--.95, S.E. Meas.--0.33; Language--.93, S.E. Meas.--0.47. These reliability coefficients were determined "by averaging the intercorrelations of the different forms of the subject tests and for the Total Test (Complete Battery), for a single grade range (Grade 8)."[3]

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[3]Ernest W. Tiegs, and Willis W. Clark, Manual, California Achievement Tests, Complete Battery, Intermediate, California Test Bureau, (1950), p. 5.

The reliability coefficient for the CTMM, Junior High Level, Grade 8, as computed by the Kuder-Richardson formula 21 utilizing 200 cases, was .87. The reliability coefficient computed by the split-halves method and corrected by the Spearman-Brown formula for the total test was .95.

> "Beldon, a former educational statistician for the Los Angeles County Schools, reported a correlation of 0.88 between the CTMM and the Stanford-Binet...The validity of the CTMM and Short-Form is further attested to by its high correlation with I.Q's obtained from the Wechsler-Bellevue and the Wechsler Intelligence Scale for Children (WISC). Clark reports a correlation of 0.81 between the California Short Form Test of Mental Maturity, Advanced, and the Wechsler-Bellevue. Altus, in testing a representative sample of junior high students with both the CTMM and the WISC, reported a correlation between I.Q.'s of 0.81."[4]

IV. STATISTICAL PROCEDURES

Appropriateness of chi-square as a measuring device.--Chi-square was selected as a method for comparing the experimental group with the control group for the following reasons. (1) Chi-square is not concerned with population characteristics; it is therefore a nonparametric statistic which does not rely on assumptions concerning the form of population distribution. (2) "Chi-square is a general purpose statistic that has many and diverse applications. Its most common use is in connection with data in the form of

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[4]Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs, Manual, California Short-Form Test of Mental Maturity, Junior High Level, (1957, California Test Bureau, Los Angeles), p. 6.

frequencies, or data that can be reduced to frequencies. This includes proportions and even probabilities."[5] (3) In using chi-square it is possible to combine several statistics of other values in the same test; therefore, a test of significance for more than one set of data can be done at one time. (4) Chi-square is used to test the null hypothesis that observed and theoretical frequencies are no more than would be expected from chance alone. (5) Chi-square is relatively easy to use in contrast with other statistical tests which are either too difficult or not applicable when there are many categories into which the data can be classified, when there are many different possible outcomes that can be derived from the data, and when it is desired to consider them all at once.

Because of the need, therefore, to compare two groups, the experimental and the control groups, in order to discern whether they were random samples of the same population in terms of the seven criterion variables, chi-square was the instrument utilized.

In formula form, chi-square is:

$$\chi^2 = \frac{(f_o - f_e)^2}{f_e}$$

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[5]J. P. Guilford, Fundamental Statistics in Psychology and Education, (McGraw-Hill Book Company, Inc., New York, 1956), p. 228.

CHAPTER IV

PRESENTATION AND INTERPRETATION OF FINDINGS

The research question upon which this study was based was: Will students who have been exposed to a series of "learning experiences" consisting of counseling interviews and group discussion periods in which the variables affecting curricular and vocational choice are discussed, make more realistic choices than a control group which is not exposed to the learning program?

In essence, to answer this research question, it was necessary to break it down into the following two sub-questions.

1. Do students change their choices as a result of a learning program?

2. Will students' choice be more "realistic" as a result of a learning program?

Findings and interpretations were presented concurrently for each question.

Findings and interpretations for the frequency and direction of change in realisticness of choice on each of the criterion measures.--Comparison of the experimental and control groups in terms of frequency and direction of change was determined for each of the criterion variables by means of chi-square. The results are presented in Table 3. As designated in Chapter III, "more real" for criteria 1 through 7 was defined as: (1) movement from no choice to a realistic choice; or (2) movement from an unrealistic choice

TABLE 3

FREQUENCY AND DIRECTION OF CHANGE IN REALISTICNESS OF CHOICE ON THE CRITERION MEASURES

	More Real	Equal	Less Real	Chi-Square
Criterion 1				
Experimental	3	23	4	.107
Control	3	23	3	
Criterion 2				
Experimental	4	13	3	7.55*
Control	0	23	1	
Criterion 3				
Experimental	4	24	1	3.63
Control	1	29	0	
Criterion 4				
Experimental	4	25	1	.35
Control	4	24	2	
Criterion 5				
Experimental	6	21	3	1.90
Control	5	18	7	
Criterion 6				
Experimental	0	15	5	5.06
Control	2	21	1	
Criterion 7				
Experimental	1	26	3	.36
Control	2	25	3	

*A chi-square of 6.0 is significant at the five per cent level of confidence for two degrees of freedom.

to a realistic choice. "Less real" for criteria 1 through 7 was defined as: (1) movement from no choice to an unrealistic choice; or (2) movement from a realistic choice to an unrealistic choice. "Equal" choice was defined as: (1) making the same choice in the post as in the pre-testing. This "equal" category was interpreted as meaning either making an equally realistic or an equally unrealistic selection in the post as in the pre-testing and involved the equating of some selections. For example, equality of choice in terms of criterion 1 consisted of equating General Business and General Education. Latin, Spanish or French were of equal value in terms of criterion 5. Another exception was defined in terms of criterion 5; "no choice" of a foreign language in the pre and in the post-testing was categorized as falling under the "equal" column. Those who made "no choice" for criteria 2 and 6 were eliminated from the data for these two measures.

For criteria 1, 3, 4, 5, and 7 it was found that chi-square did not approach statistical significance at the 10% level of confidence. Criterion 2 was significant at the 2½% level of confidence. This indicated that the experimental group tended to change their vocational choices in the direction of more real choices which were congruent with tested mental ability than did the control group. Criterion 6 was significant at approximately the 8% level of confidence. This indicated that the control group tended to change their vocational choices in the direction of more real choices which were congruent with tested interests than did the experimental

group. Data on Table 3 for criterion 6 indicated that the experimental group tended to make vocational choices in the direction of less real choices and none in the direction of more real choices when these choices were measured for congruence with tested interests.

Those who made no final vocational choices were eliminated from the data in determining chi-square for criteria 2 and 6. There were ten in the experimental group and six in the control group who were therefore excluded on this basis. Thus the results for these criteria were determined on a lesser number of frequencies. And this may have influenced the trends as they are apparent on Table 1 for these variables.

The significance of chi-square for these two variables may indicate that the experimental group was more reluctant to make choices which were congruent with tested interests. In other words, the learning program may have helped them to make more careful selections in terms of equating their vocational choices with mental ability, and it may also have been a factor leading them to underestimate the importance of interests in these same choices.

Since chi-squares were determined on a six-cell basis with two degrees of freedom for Table 3, it was not necessary to use Yates' correction for continuity. "When there is only one degree of freedom a correction for continuity should be used."[1]

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[1]Virginia L. Senders, Measurement and Statistics, (New York: Oxford University Press, 1958), p. 422.

Those students who made the same selections initially as finally are shown in the frequencies under the "equal" column in Table 3. As can be observed, the frequencies in the "more real" column and those in the "less real" column in no instance exceeded 7, and in most instances were 4 or fewer. This indicated how difficult it was to produce change in these adolescents insofar as the criterion variables were concerned whether one used an organized guidance approach or incidental guidance.

There is no definite trend which is evident from the frequencies on Table 3 which indicated that the experimental group made more change toward realistic choices (insofar as all the criterion variables taken collectively are concerned) than did the control group.

Thus, Table 3 indicated how many students chose the same or similar realistic or unrealistic selections in the final testing as in the original. This table, however, did not show the frequencies of those who were originally realistic in their choices; it merely indicated the tendency toward "no change" that was apparent in terms of each of the criterion variables.

There are probably many reasons why this tendency toward "no change" was so pronounced. Essentially, it can be demonstrated that the criterion variables upon which the hypothesis was measured did not allow for many opportunities to change. In making any given selection, the students seemed to have definite preferences--perhaps a mental set--which predisposed them to make one rather than

another choice. Modesty in self-estimate of mental ability, for example, or conscientiousness in making the initial choices probably played a part in tending to make them relatively realistic to begin with.

Since change toward more realistic choices was a desired outcome, and the experimental sample had a tendency to make realistic selections initially, it was difficult to secure the proportion or frequencies of change necessary to give statistical significance.

As the findings indicated, adolescent boys and girls in this sample did not readily change their choices. Perhaps this is characteristic of adolescents in general in terms of the selected criteria. Change may require more time than was set aside for the study, or perhaps change is not readily measured in terms of the criterion variables used in this study.

Since this was an exploratory study, probability limits for statistical significance were not set beforehand. The fact that the entire sample selected for this study was small may have had some significance insofar as the findings were concerned; for example, if we used ten times this number in a similar experiment and found frequencies in the same proportions as they were for each variable in this study, we would find that for criteria 3 and 5, this would increase the value of chi-square to the point where it would have statistical significance beyond the five per cent level of confidence.

The overabundance of frequencies in the "equal" category rendered it difficult to evaluate the data from Table 3, and also this manner of data presentation does not indicate whether the experimental group made more realistic choices than the control group, in total. Therefore, the data were re-evaluated for each criterion measure on a four-cell table in terms of "desirability" versus "undesirability" of the choices.

Findings and interpretations of the comparison of desirable and undesirable change on the criterion measures.--As designated in Chapter III, desirable change was defined as: (1) movement from an unrealistic choice in the pre-testing to a realistic choice in the post-testing; (2) movement from no choice in the pre-testing to a realistic choice in the post-testing; and (3) agreement between an initial realistic choice and a final realistic choice. In like manner, an undesirable choice was defined as: (1) movement from a realistic choice in the pre-testing to an unrealistic choice in the post-testing; (2) movement from no choice in the pre-testing to an unrealistic choice in the post-testing; (3) agreement between an initial unrealistic choice and a final unrealistic choice. In categorizing the data for criterion 5 the following exception was made. When an individual made "no choice" of a foreign language, this was considered desirable if the individual's CAT language score was 9.5 or below and undesirable if his score was 9.6 and above. In each of the other criterion variables, an individual who made no final choice was excluded from the data.

Chi-square was again determined for each of the criterion variables as shown by Table 4. In each instance it was found that chi-square did not approach a level of statistical significance and it was therefore not necessary to use Yates' correction for continuity.

A summary of the findings from Table 4 indicated that both groups were largely realistic initially in the seven areas tested. On criteria 2, 6, and 7, the control group made more desirable choices than did the experimental group, though this was not statistically significant. For criteria 2 and 6 the number in the control group who made vocational choices exceeded the number in the experimental group by four.

In summary then, the findings pertaining to Table 4 indicated that there were no statistical significances between gains in realism of choices of the experimental group as compared with the control group in any of the seven criterion variable areas upon which the findings were based. Therefore, as far as this study was concerned, students' choices did not become more realistic as a result of the learning program.

Several factors may have been responsible for this conclusion. The sample was slightly more intelligent than would be the case if it had been drawn randomly from a normally distributed population. The experimental and control groups were matched for intelligence and, as was expected, the t test showed that there was no significant difference between the mean I.Q.'s (as derived from the CTMM) of both groups ($t = .125$). The mean I.Q. for the experimental

TABLE 4

COMPARISON OF DESIRABLE AND UNDESIRABLE CHANGE ON THE CRITERION MEASURES

	Desirable	Undesirable	Chi-Square*
Criterion 1			
Experimental	20	10	.028
Control	20	9	
Criterion 2			
Experimental	17	3	.027
Control	20	4	
Criterion 3			
Experimental	22	7	.643
Control	20	10	
Criterion 4			
Experimental	27	3	.58
Control	25	5	
Criterion 5			
Experimental	17	13	.26
Control	15	15	
Criterion 6			
Experimental	12	8	.586
Control	17	7	
Criterion 7			
Experimental	14	16	1.68
Control	19	11	

*A chi-square of 3.8 is significant at the five per cent level of confidence for one degree of freedom.

group was 103 and 105 for the control group.

There might have been some other inherent characteristic in the sample that made it different from a normal population. For example, the fact that the sample was largely transcient in character may have had significance, since transcient children have had somewhat broader experiences, and this may have been influential in the tendency toward realism. No attempt was made to control "transcient" versus "non-transcient" in setting up the sample.

The cutting lines of the criterion variables were set purposely high. If they had been set lower, perhaps some statistical significance might have been evident, but this is rather doubtful. Some experimenting with the chi-square was attempted using different limits and seemed to indicate that changes in the experimental group were similar in trend to changes in the control group.

The learning program itself may have been a factor in the lack of statistical difference of the criterion variables. The experimental group manifested a general reluctance toward discussion. They seemed to be more passive in attitude than other similar groups of their age and maturity level.

One possible explanation for the large numbers of desirable choices for criterion 3, Table 4, may have been because of the selective grouping policy in classroom organization within the school situation. Such homogeneous grouping may have influenced the findings for this criterion, for it is commonly accepted that such grouping is recognized by students, and they thereupon classify each

other and themselves as to intelligence level on the basis of such arrangements.

The basic reason for a self-contained classroom organization in the junior high school rests on the thesis that such an operation facilitates the adjustment of the pupils. Perhaps this study is somewhat of a justification for such an arrangement.

On the other hand, as the review of the literature suggested, perhaps our young people at the eighth grade level are more realistic in their choices than some theorists admit.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of the study was to investigate the effects of a "learning program" on eighth grade students. The "learning program" consisted of group discussion periods and individual counseling interviews. A matched control group received traditional classroom instruction.

Seven criteria of "realism of choice" were developed from standardized test scores and responses to a questionnaire. "Realism" was defined as congruence between scores on two separate variables. Scores on each variable were first dichotomized by a cut-off score which was subjectively determined after a review of pertinent literature. Then, by a simple four-cell comparison of scores on appropriate pairs of variables, students were given a preliminary classification of "realistic" or "unrealistic" on each of the seven criteria. As an example, a student with "high" academic ability who chose a college curriculum was classified as "realistic". If he had chosen a non-college curriculum, he would have been classified as "unrealistic".

A second administration of some of the variables was completed at the close of the "learning program," and all students were again classified as "realistic" or "unrealistic" on the seven criteria.

The resulting data were analyzed in two ways, and the findings were presented in two sections. The first section presented data on the frequency and direction of change in "realisticness" in order to answer the question: Do students change their choices as a result of a learning program? To answer this question, the absolute frequency and direction of change were determined for both the experimental and the control groups. The number of changes of classification was found to be small for both groups. Chi-square tests of significance indicated that the experimental group made more changes than the control group on two criterion measures, those involving congruences between vocational choice and academic ability and between vocational choice and tested interests.

In the second analysis, pre-post changes in classification were labeled as either "desirable" or "undesirable", depending on the direction of change, and a second question was raised: Will students' choices be more realistic as a result of a learning program? In this case, chi-square tests showed no significant differences between the experimental and control groups in desirability of change on any of the criteria.

II. CONCLUSIONS

Empirical conclusions

It was concluded that the experimental group did not make sufficient gains over the control group to justify a "learning program" on the basis of the criteria used in this study.

It was also concluded that either eighth graders made very little change during the period of the study, or the instruments used were relatively insensitive to changes that may have occurred.

Methodological conclusions

Change is difficult to measure; selection of cut-off scores is an arbitrary decision; and definition of "realism" and "desirability" is a subjective process.

III. RECOMMENDATIONS FOR FURTHER STUDY

1. To construct a similar experimental study in which the sample has been screened beforehand so that the researcher would have for analysis only individuals who made initial unrealistic choices.

2. To isolate the effectiveness of individual counseling or group guidance by utilizing only one technique or the other.

3. To extend the period of time during which the experiment is conducted.

4. To develop different criterion measures with which to measure the effectiveness of a learning program.

5. To increase the size of the sample.

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APPENDIX

CONTROL GROUP

No.	Age	Sex	M.A.	Arith. Score Gr.Pl.	Lang. Score Gr.Pl.	Math Pre	Math Post	Lang. Pre	Lang. Post	Curriculum Pre	Curriculum Post
1	13	M	115	10.1	8.8	A.	A.	-	Fr.	C.P.	C.P.
2	13	M	122	10.8	9.5	A.	A.	Lat.	Lat.	C.P.	C.P.
3	14	M	95	8.5	8.7	A.	G.M.	-	-	C.P.	G.E.
4	14	M	113	8.5	8.5	G.M.	G.M.	-	-	G.E.	G.E.
5	15	M	104	7.5	7.1	G.M.	G.M.	-	-	B.E.	G.E.
6	14	M	86	7.0	6.2	G.M.	G.M.	Sp.	-	G.E.	-
7	13	M	98	10.4	10.3	A.	A.	Fr.	-	G.E.	B.E.
8	14	M	117	10.9	9.1	A.	A.	-	Lat.	C.P.	C.P.
9	13	M	126	8.2	8.6	A.	A.	-	Sp.	C.P.	C.P.
10	14	M	106	7.4	7.1	G.M.	G.M.	-	-	B.E.	B.E.
11	14	M	94	9.8	8.2	G.M.	G.M.	-	-	G.E.	G.E.
12	13	M	109	11.0	9.1	A.	A.	Fr.	Fr.	C.P.	C.P.
13	14	M	103	9.6	9.1	A.	A.	Sp.	Sp.	B.E.	C.P.
14	13	M	110	10.0	8.5	A.	A.	Sp.	Sp.	C.P.	C.P.
15	14	F	97	8.8	9.7	A.	G.M.	-	-	B.E.	B.E.
16	14	F	95	9.8	10.1	G.M.	A.	Sp.	Lat.	C.P.	C.P.
17	13	F	91	9.5	7.5	G.M.	G.M.	-	-	G.E.	G.E.
18	13	F	119	9.4	10.5	G.M.	G.M.	-	-	B.E.	B.E.
19	14	F	106	10.1	9.6	G.M.	A.	Lat.	Lat.	B.E.	C.P.
20	14	F	114	10.7	9.6	A.	A.	-	Fr.	C.P.	C.P.
21	14	F	105	10.3	10.2	A.	A.	Fr.	-	B.E.	B.E.
22	13	F	89	7.8	9.3	G.M.	G.M.	Sp.	-	C.P.	B.E.
23	14	F	109	11.0	10.7	A.	A.	Fr.	Sp.	B.E.	C.P.
24	13	F	109	8.7	8.4	G.M.	G.M.	-	-	B.E.	B.E.
25	14	F	113	9.0	10.6	G.M.	G.M.	Sp.	-	B.E.	B.E.
26	13	F	100	9.5	9.4	G.M.	A.	Sp.	Fr.	C.P.	C.P.
27	13	F	89	9.6	9.0	A.	G.M.	Sp.	-	C.P.	B.E.
28	15	F	98	9.3	8.9	G.M.	G.M.	Sp.	-	B.E.	B.E.
29	14	F	105	9.8	9.8	A.	A.	Fr.	-	B.E.	B.E.
30	13	F	116	9.5	9.5	A.	A.	Lat.	Lat.	C.P.	C.P.

Gr.Pl. - Grade Placement
G.M. - General Math
A. - Algebra
Lang. - Language
Sp. - Spanish
Fr. - French
Lat. - Latin
G.E. - General Education
B.E. - Business Education
C.P. - College Preparatory

CONTROL GROUP

No.	Tested Interest	Stated Interest		Stated M.Abil.		Vocational Choice	
		Pre	Post	Pre	Post	Pre	Post
1	Sci., S.S.,Out.	Out.	Out.	Av.	Av.	Game Warden	Game Warden
2	Mus.,Art., Sci.	Sci.	Sci.	A.A.	A.A.	Aero. Eng.	Same
3	Mech. Sci.	Sci.	Mech.	Av.	Av.	Aero. Eng.	Same
4	Pers. Mech.	Mech.	Mech.	Av.	Av.	Work for C.D.	None
5	Lit. Mus.	Mech.	Mech.	Be.	Be.	Machinery	Grease Monkey
6	Comp.,S.S.,Cl.	Sci.	Sci.	Av.	Av.	None	None
7	Out.,Lit.,Sci.	Out.	Out.	Av.	Av.	Guiding	Conserv/Writ.
8	Art.,Sci.,S.S.	Art.	Art.	Av.	Av.	Own,Op. S.C.	Artist
9	Art.,Pers.,	Art.	Out.	Av.	Av.	Ofc. Work	None
10	Comp.,Cl.,Lit.	Mech.	Mech.	Av.	Av.	Machinist	Same
11	Out.,S.S.,Sci.	Out.	Mech.	Av.	Av.	Chef	Carpenter
12	Cl.,Pers.,Comp.	Comp.	Comp.	A.A.	A.A.	Architect	Same
13	Cl.,S.S.,Sci.	Out.	Mech.	Av.	Av.	Pro. Sports.	Engineer
14	Out. Art.	Out.	Out.	A.A.	A.A.	Ranch,Pro Sp.	Outdoor Work
15	Cler. Comp.	Cler.	Cler.	Av.	Av.	Secretary or	Air Hostess
16	S.S.,Comp.,Sci.	Cler.	S.S.	Av.	Av.	Teacher	Same
17	S.S. Comp.	Cler.	Cler.	Av.	Av.	Model	None
18	Cler.	Cler.	Cler.	Av.	Av.	Secretary	Same
19	Cl.,Pers.,S.S.	Cler.	S.S.	A.A.	A.A.	Nurse	None
20	Mus.,Art.,Out.	S.S.	S.S.	A.A.	Av.	Teacher	Same
21	Out. Lit.	Cler.	S.S.	Av.	Av.	Secretary	Same
22	Sci.,Lit.,Out.	Sci.	Lit.	Av.	Av.	Lawyer	None
23	S.S. Comp.	Cler.	Pers.	A.A.	A.A.	Secretary	Teacher
24	Pers.,Cl.,Comp.	Cler.	Cler.	Av.	Av.	Ofc. Work	Receptionist
25	Art. Out.	Art.	Art.	Av.	Av.	Artist	Same
26	Mech. Comp.	Comp.	Comp.	Av.	Av.	Air Hostess	Same
27	Out.,Sci.S.S.	Pers.	S.S.	Av.	Av.	Beautician	Same
28	Lit.,Out.,Sci.	Cler.	Cler.	Av.	Av.	Secretary	Same
29	Lit.,Comp.,Cl.	Cler.	Cler.	A.A.	A.A.	Secretary	Same
30	Sci. Mus.	Sci.	Sci.	A.A.	A.A.	Veterinarian	Same

M.Abil. - Mental Ability
Cl.,Cler. - Clerical
Pers. - Persuasive
Comp. - Computational
Art. - Artistic
Sci. - Scientific
Out. - Outdoor
Lit. - Literary
Conserv. - Conservation
Eng. - Engineer
S.S. - Social Service
C.D. - Columbus Dispatch
S.C. - Swimming Club
Sp. - Sports
Mech. - Mechanical
Av. - Average
A.A. - Above Average
Be. - Below Average
Writ. - Writing
Op. - Operate

CONTROL GROUP

TABLE 3

No.	Criteria						
	Curriculum and Mental Ability	Vocational Ch. and Ment.Abil.	Self-Eval. and Tested M.Abil.	Math Choice and CAT	Lang. Choice and CAT	Vocational Ch. & Tested Int.	Stated and Tested Int.
	1	2	3	4	5	6	7
1	=	=	=	=	=	=	=
2	=	=	=	=	=	=	=
3	+	=	=	+	=	=	=
4	=	0	=	=	=	=	=
5	=	=	=	=	=	=	=
6	0	0	=	=	+	0	=
7	=	=	=	=	-	=	=
8	=	=	=	=	-	+	=
9	=	0	=	=	-	0	-
10	=	=	=	=	=	=	=
11	=	=	=	=	=	+	-
12	=	=	=	=	=	=	=
13	-	-	=	=	=	=	-
14	=	=	=	=	=	=	=
15	=	=	=	+	=	=	=
16	=	=	=	+	=	=	+
17	=	0	=	=	=	0	=
18	=	=	=	=	=	=	=
19	-	0	=	+	=	0	=
20	=	=	+	=	+	=	=
21	=	=	=	=	-	=	=
22	+	0	=	=	+	0	=
23	-	=	=	=	=	=	=
24	=	=	=	=	=	=	=
25	=	=	=	=	-	=	=
26	=	=	=	-	=	=	=
27	+	=	=	-	+	=	+
28	=	=	=	=	+	=	=
29	=	=	=	=	-	=	=
30	=	=	=	=	=	=	=

TABLE 4

	Criteria						
	Curriculum and Mental Ability	Vocational Ch. and Ment.Abil.	Self-Eval.and Tested M.Abil.	Math Choice and CAT	Lang. Choice and CAT	Vocational Ch. & Tested Int.	Stated and Tested Int.
	1	2	3	4	5	6	7
1	D	D	D	D	D	D	D
2	D	D	D	D	U	D	D
3	D	U	D	D	D	D	D
4	D	0	D	D	D	0	D
5	D	D	U	D	D	U	U
6	0	0	D	D	D	0	U
7	D	D	D	D	U	D	D
8	D	D	U	D	U	D	D
9	D	0	U	U	U	0	U
10	D	D	D	D	D	U	U
11	D	D	D	U	D	D	U
12	U	U	U	D	U	U	D
13	U	U	D	D	U	U	U
14	U	D	U	D	U	D	D
15	D	D	D	D	U	D	D
16	U	U	D	D	D	D	D
17	D	0	D	D	D	0	U
18	U	D	U	D	U	D	D
19	U	0	U	D	D	0	D
20	U	D	D	D	D	D	U
21	D	D	D	D	U	U	U
22	D	0	D	D	D	0	D
23	U	D	U	D	D	D	U
24	D	D	D	D	D	D	D
25	D	D	D	D	U	D	D
26	U	D	D	U	U	U	D
27	D	D	D	U	D	D	D
28	D	D	D	D	D	U	U
29	D	D	U	D	U	D	D
30	D	D	D	U	U	D	D

= Equally Realistic or Unrealistic
\+ More Real
\- Less Real
0 No Final Choice

D Desirable
U Undesirable

EXPERIMENTAL GROUP

No.	Age	Sex	M.A.	Arith. Score Gr.Pl.	Lang. Score Gr.Pl.	Math Pre	Math Post	Lang. Pre	Lang. Post	Curriculum Pre	Curriculum Post
1	14	M	127	10.0	8.7	G.M.	A.	-	Lat.	C.P.	C.P.
2	14	M	124	10.7	10.2	G.M.	G.M.	Fr.	Fr.	C.P.	B.E.
3	13	M	98	9.5	8.9	A.	A.	Sp.	Sp.	G.E.	C.P.
4	14	M	109	11.0	8.6	A.	A.	Sp.	Sp.	C.P.	C.P.
5	15	M	97	7.0	8.0	G.M.	G.M.	Fr.	-	G.E.	B.E.
6	16	M	79	7.5	8.1	G.M.	G.M.	-	-	G.E.	G.E.
7	14	M	95	7.0	8.0	G.M.	G.M.	-	Lat.	G.E.	G.E.
8	14	M	123	10.3	9.2	A.	A.	Lat.	Sp.	C.P.	C.P.
9	14	M	117	12.5	12.0	A.	A.	Fr.	Fr.	C.P.	C.P.
10	16	M	91	7.5	7.7	G.M.	G.M.	-	-	B.E.	B.E.
11	13	M	96	9.9	7.2	A.	A.	Sp.	Sp.	C.P.	C.P.
12	14	M	100	10.1	8.9	A.	A.	Sp.	Sp.	C.P.	C.P.
13	13	M	108	10.4	9.6	A.	G.M.	-	-	C.P.	B.E.
14	14	M	105	9.6	8.6	A.	A.	Sp.	Sp.	B.E.	C.P.
15	15	F	96	9.1	8.1	G.M.	G.M.	Sp.	-	B.E.	B.E.
16	16	F	79	5.8	8.2	G.M.	G.M.	Fr.	-	C.P.	B.E.
17	14	F	89	6.6	7.3	G.M.	G.M.	Sp.	-	B.E.	G.E.
18	13	F	118	10.3	10.2	G.M.	A.	Sp.	Lat.	C.P.	C.P.
19	13	F	100	6.8	8.1	G.M.	G.M.	-	Fr.	G.E.	G.E.
20	13	F	115	11.5	10.3	A.	A.	Fr.	Fr.	C.P.	C.P.
21	14	F	100	9.5	8.2	G.M.	G.M.	-	-	G.E.	C.P.
22	13	F	92	9.2	9.4	G.M.	G.M.	-	-	B.E.	B.E.
23	14	F	116	10.7	9.7	A.	A.	-	-	B.E.	B.E.
24	14	F	104	9.0	8.8	G.M.	G.M.	Fr.	Lat.	C.P.	C.P.
25	13	F	124	10.6	11.0	G.M.	A.	Lat.	Lat.	C.P.	C.P.
26	13	F	96	7.6	8.6	G.M.	G.M.	Fr.	-	G.E.	B.E.
27	13	F	85	7.9	6.6	G.M.	G.M.	Lat.	-	B.E.	B.E.
28		F	97	9.3	9.2	A.	G.M.	Lat.	Lat.	C.P.	B.E.
29	13	F	99	9.4	10.5	G.M.	G.M.	Fr.	Fr.	G.E.	B.E.
30	14	F	114	11.0	10.6	A.	A.	Lat.	Sp.	C.P.	C.P.

Gr.Pl. - Grade Placement
G.M. - General Math
A. - Algebra
Lang. - Language
Sp. - Spanish
Fr. - French
Lat. - Latin
G.E. - General Education
B.E. - Business Education
C.P. - College Preparatory

EXPERIMENTAL GROUP

No.	Tested Interest	Stated Interest		Stated M. Abil.		Vocational Choice	
		Pre	Post	Pre	Post	Pre	Post
1	Pers. Comp.	Comp.	Comp.	Av.	Av.	Salesman	Accountant
2	Art. Outdoor	Mech.	Mech.	Av.	A.A.	Mech.	Mech.
3.	Cler. Comp.	Outdoor	Outdoor	Av.	Av.	None	None
4	Cler. Sci.	Outdoor	Mech	Av.	Av.	None	-
5	Out. Lit.	Outdoor	Outdoor	Be.	Be.	Skin Diving	Same
6	S.S.	Outdoor	S.S.	Be.	Be.	-	-
7	Art.	Outdoor	Outdoor	Av.	Av.	-	-
8	Pers. Sci.	Outdoor	Outdoor	Av.	A.A.	Salesman	None
9	Art. Comp.	Mech.	Mech.	A.A.	A.A.	Mech.	Same
10	Comp. S.S.	Pers.	Mech.	Av.	Av.	Business	Electronics
11	Mech. S.S.	Mech.	Lit.	Be.	Av.	Actor	Actor
12	S.S. Lit.	Outdoor	Outdoor	Av.	Av.	Navy	None
13	S.S.,Lit.,Sci.	Sci.,	Sci.	Av.	A.A.	Professional Bowler	
14	Sci.	Sci.	Sci.	Av.	Av.	Scientist	None
15	Comp. S.S.	Lit.	Cler.	Av.	Av.	Secretary	Secretary
16	Mech.	Cler.	S.S.	Av.	Av.	None	Nurse
17	Mech. Art.	Art.	Art.	Av.	Av.	-	-
18	Sci. Lit.	Cler.	Cler.	Av.	Av.	Modeling	Same
19	Out.	Outdoor	Outdoor	Av.	Av.	Breed and own Race Horses	
20	Pers. Sci.	Sci.	Sci.	Av.	Av.	-	-
21	Art. Pers.	Art.	Art.	Av.	Av.	Teaching Art	Same
22	Cler. Comp.	Cler.	Cler.	Av.	Av.	Secretary	Secretary
23	Comp. Cler.	Comp.	Cler.	Av.	Av.	-	Secretary
24	Sci. S.S.	S.S.	S.S.	Av.	Av.	Nurse	Same
25	Sci. Lit.	Sci.	Lit.	A.A.	A.A.	Doctor	Phy.Therapist
26	Mech. Out.	None	S.S.	Be.	None	None	Business
27	Comp. Lit.	Art.	Cler.	Av.	Av.	-	Secretary
28	Art. S.S.	Art.	Cler.	A.A.	Av.	Teaching Art	Cler.
29	Sci. Out.	Cler.	Cler.	Av.	Av.	-	Secretary
30	Art.	Art.	Art.	Av.	Av.	-	-

M. Abil. - Mental Ability
Phy. - Physical
Pers. - Persuasive
Comp. - Computational
Art. - Artistic
Cler. - Clerical
Sci. - Scientific
Out. - Outdoor
Lit. - Literary
S.S. - Social Service
Mech. - Mechanical
Av. - Average
A.A. - Above Average
Be. - Below Average

EXPERIMENTAL GROUP

TABLE 3

No.	Criteria 1 Curriculum and Mental Ability	2 Vocational Ch. and Ment.Abil.	3 Self-Eval. and Tested M.Abil.	4 Math Choice andCAT	5 Lang. Choice and CAT	6 Vocational Ch. & Tested Int.	7 Stated and Tested Int.
1	=	=	=	+	-	=	=
2	-	=	+	=	=	=	=
3	-	O	=	=	=	O	=
4	=	O	=	=	=	O	=
5	=	=	=	=	+	=	=
6	=	O	=	=	=	=	+
7	=	O	=	=	-	O	=
8	=	O	+	=	=	O	=
9	=	=	=	=	=	=	=
10	=	-	=	=	=	-	=
11	=	=	+	=	=	=	-
12	=	O	=	=	=	O	=
13	+	=	-	-	=	=	=
14	-	O	=	=	=	O	=
15	=	=	=	=	+	=	=
16	+	-	=	=	+	-	=
17	=	O	=	=	+	O	=
18	=	=	=	+	=	=	=
19	=	=	=	=	-	=	=
20	=	O	=	=	=	O	=
21	-	=	=	=	=	=	=
22	=	=	=	=	=	=	=
23	=	+	=	=	=	=	=
24	=	=	=	=	=	=	=
25	=	=	=	+	=	=	=
26	=	+	O	=	+	-	-
27	=	-	=	=	+	=	=
28	+	+	+	+	=	-	-
29	=	+	=	=	=	-	=
30	=	O	=	=	=	O	=

TABLE 4

No.	Criteria 1 Curriculum and Mental Ability	2 Vocational Ch. and Ment.Abil.	3 Self-Eval. and Tested M.Abil.	4 Math Choice and CAT	5 Lang. Choice and CAT	6 Vocational Ch. & Tested Int.	7 Stated and Tested Int.
1	D	D	U	D	U	D	D
2	U	D	D	U	D	U	U
3	U	O	D	U	U	O	U
4	U	O	D	D	U	O	U
5	D	D	U	D	D	D	D
6	D	O	D	D	D	O	D
7	D	O	D	D	U	O	U
8	D	O	D	D	U	O	U
9	D	D	D	D	D	U	U
10	D	U	D	D	D	U	U
11	U	D	D	D	U	U	U
12	U	O	D	D	U	O	U
13	D	D	U	U	U	D	D
14	U	O	D	D	U	O	D
15	D	D	D	D	D	D	U
16	D	U	U	D	D	U	U
17	D	O	D	D	D	O	D
18	D	D	U	D	D	D	U
19	D	D	D	D	U	D	D
20	D	O	U	D	D	O	D
21	U	U	D	D	D	D	D
22	D	D	D	D	D	D	D
23	U	D	U	D	U	D	D
24	U	D	D	D	U	D	D
25	D	D	D	D	D	D	D
26	D	D	O	D	D	U	U
27	D	D	D	D	D	D	U
28	D	D	D	D	U	U	U
29	D	D	D	D	D	U	U
30	U	O	D	D	D	O	D

= Equally Realistic or Unrealistic
\+ More Real
\- Less Real
O No Final Choice

D Desirable
U Undesirable

QUESTIONNAIRE

The following questions concern your future educational and vocational plans. Please answer them as accurately and completely as you can.

NAME_____AGE_____DATE OF BIRTH_____SEX_____

I. In the ninth grade you will be required to take English I, General Science, and Physical Education and Health. You may elect to take either General Math or Algebra I as well as one other course if you are an average (c) student or two other courses if you are an above-average (A or B) student. Check with an (x) the elective courses you plan to schedule for next year.

1. General Math____
2. Algebra I_____
3. Fine Arts_____
4. General Business____
5. French I____
6. Latin I_____
7. Spanish I_____
8. Home Economics I____
9. General Shop_____
10. Instrumental Ensembles___
11. Junior Band____
12. Senior Band____
13. Choir____
14. Vocal Ensembles____
15. Ancient History____
16. General Speech_____

* *

What curriculum (course of study) do you plan to follow during your high school career?

General Education____ Business Education____ College Preparatory____

* *

II.[1] Do you plan to complete your high school education? Yes___ No___

If you do complete high school, do you plan to enter college? Yes__No__

What occupation do you plan to choose for your life's work?_____

What do you believe your level of mental ability to be?

Average___ Above Average____ Below Average____

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[1]Most of the questions in Part II of this questionnaire were derived from a similar questionnaire in a thesis written by Forrest Elton Orebaugh, "Elements Involved in the Vocational Choices of One Hundred Four Ninth Grade Students," Unpublished Master's Thesis, The Ohio State University, 1959.

Which one of the following areas of work do you believe would be of most interest to you? Check one only.

1. Working out doors most of the time._____
2. Working with tools, machinery, and equipment._____
3. Scientific work such as testing ideas and conducting experiments.___
4. Work which requires the use of Mathematics._____
5. Work where you try to influence other people such as selling things._____
6. Work related to art.____
7. Work related to writing or acting._____
8. Musical work such as singing, dancing or playing in a band.____
9. Social work where you help other people with their problems.____
10. Clerical or office work.____

* *

List what you consider to be the major influencing factor or factors in your vocational choice.