

DIFFERENTIAL CHARACTERISTICS AMONG
STUDENTS GRADUATING FROM VARIOUS
CURRICULAR PATTERNS

by

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Differential Characteristics Among Students
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TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
I INTRODUCTION	1
II REVIEW OF RESEARCH	5
A. Curricular and Occupational Choice	5
1. H. D. Carter	6
2. E. S. Bordin	7
3. D. C. Miller and W. H. Form	8
4. E. Ginzberg and Associates	9
5. D. E. Super	11
B. Differential Tests	14
C. Discriminant Function	16
III METHOD OF SELECTING THE DATA	23
IV DESCRIPTION OF THE MEASURES USED	30
V TREATMENT OF THE DATA AND RESULTS	36
A. Model of the Analysis of Variance - Single Classification	36
1. Analysis of Variance Single Classification Among Seven Groups on Twelve Variables ...	37
B. Model of the Discriminant Function	73
1. Results of Discrimination Between Girls College Preparatory and Commercial Curricular Groups	76
2. Results of Discrimination Between Girls College Preparatory and Girls General Education Curricular Groups	80
3. Results of Discrimination Between Girls College Preparatory and Distributive Education Curricular Groups	82
4. Results of Discrimination Between Commercial and Distributive Education Curricular Groups	84
5. Results of Discrimination Between Commercial and Girls General Education Curricular Groups	86

TABLE OF CONTENTS (Continued)

<u>Chapter</u>	<u>Page</u>
6. Results of Discrimination Between Distributive Education and Girls General Education Curricular Groups	88
7. Results of Discrimination Between Boys College Preparatory and Distributive Education Curricular Groups	90
8. Results of Discrimination Between Boys College Preparatory and Trades and Industry combined with Boys General Education Curricular Groups	92
9. Results of Discrimination Between Distributive Education and Trades and Industry combined with Boys General Education Curricular Groups	94
C. Illustrations of the Use of the Discriminant Function	96
VI DISCUSSION	102
VII SUMMARY	104
VIII SELECTED REFERENCES	111
IX APPENDICES	117

LIST OF TABLES

	<u>Page</u>
1. Minimum Curricular Criteria For Senior High School Classification	25
2. Number and Sex of Students Classified in Each Curricular Group	26
3. Analysis of Variance of the Distributive Education Group Variables Classified by Sex	28
4. Analysis of Variance of Twelve Test Scores Among Seven Curricular Groups	40-1
5. Analysis of Variance of Twelve Test Scores Among Three Female and Distributive Education Curricular Groups	42-3
6. Analysis of Variance of Twelve Test Scores Among Two Female and Distributive Education Curricular Groups	44-5
7. Analysis of Variance of Twelve Test Scores Between Girls General Education and Distributive Education Curricular Groups	47-8
8. Analysis of Variance of Twelve Test Scores Between Commercial and Girls General Education Curricular Groups	50-1
9. Analysis of Variance of Twelve Test Scores Among Three Male and Distributive Education Curricular Groups	53-4
10. Analysis of Variance of Twelve Test Scores Among Trades and Industry, Boys General Education and Distributive Education Curricular Groups	56-7
11. Analysis of Variance of Twelve Test Scores Between Distributive Education and Trades and Industry Curricular Groups	59-60
12. Analysis of Variance of Twelve Test Scores Between Boys General Education and Distributive Education Curricular Groups	62-3
13. Analysis of Variance of Twelve Test Scores Between Trades and Industry and Boys General Education Curricular Groups	65-6

LIST OF TABLES (Continued)

	<u>Page</u>
14. Analysis of Variance of Twelve Test Scores Among Boys College Preparatory, Trades and Industry, and Boys General Education Curricular Groups	68-9
15. Analysis of Variance of Twelve Test Scores Between Distributive Education and Boys College Preparatory Curricular Groups	71-2
16. Analysis of Maximum Separation Between Girls College Preparatory and Commercial Curricular Groups	79
17. Percentage of Contribution of Test Scores Variables Used For Maximum Discrimination Between Girls College Preparatory and Commercial Curricular Groups	79
18. Analysis of Maximum Separation Between Girls College Preparatory and Girls General Education Curricular Groups	81
19. Percentage Contribution of Test Scores Variables Used For Maximum Discrimination Between Girls College Preparatory and Girls General Education Curricular Groups	81
20. Analysis of Maximum Separation Between Girls College Preparatory and Distributive Curricular Groups	83
21. Percentage Contribution of Test Scores Variables Used For Maximum Discrimination Between Girls College Preparatory and Distributive Education Curricular Groups	83
22. Analysis of Maximum Separation Between Commercial and Distributive Education Curricular Groups	85
23. Percentage Contribution of Test Score Variables Used For Maximum Discrimination Between Commercial and Distributive Education Curricular Groups	85
24. Analysis of Maximum Separation Between Commercial and Girls General Education Curricular Groups	87

LIST OF TABLES (Continued)

	<u>Page</u>
25. Percentage Contribution of Test Score Variables Used For Maximum Discrimination Between Commercial and Girls General Education Curricular Groups	87
26. Analysis of Maximum Separation Between Distributive Education and Girls General Education Curricular Groups	89
27. Percentage Contribution of Test Score Variables Used For Maximum Discrimination Between Distributive Education and Girls General Education Curricular Groups	89
28. Analysis of Maximum Separation Between Boys College Preparatory and Distributive Education Curricular Groups	91
29. Percentage Contribution of Test Score Variables Used For Maximum Discrimination Between Boys College Preparatory and Distributive Education Curricular Groups	91
30. Analysis of Maximum Separation Between Boys College Preparatory and Trades and Industry Combined with Boys General Education Curricular Groups	93
31. Percentage Contribution of Test Scores Variables Used For Maximum Discrimination Between Boys College Preparatory and Trades and Industry Combined with Boys General Education Curricular Groups	93
32. Analysis of Maximum Separation Between Distributive Education and Trades and Industry Combined with Boys General Education Curricular Groups	95
33. Percentage Contribution of Test Score Variables Used For Maximum Discrimination Between Distributive Education and Trades and Industry Combined with Boys General Education Curricular Groups	95
34. Test Score Variables Used For Discrimination Between Curricular Groups	107
35. The Significance of the Discrimination Between Curricular Groups on the Selected Test Score Variables	110

LIST OF FIGURES

<u>Number</u>		<u>Page</u>
1.	Predicted v-score Profile of All Female Comparison Curricular Groups	100
2.	Predicted v-score Profile of All Male Comparison Curricular Groups	101

PREVIEW

CHAPTER I

INTRODUCTION

It was the purpose of this study to evaluate the effectiveness of single test scores for use in advising entering senior high school students in selecting their curricular patterns and to propose a statistical method for combining the scores from several tests into a predictive formula indicating the most appropriate curricular pattern for a student.

"The youth of our country are one of our greatest national assets. To those who recognize this as an orator's cliché, let it be said that clichés are stuffy only when they are substitutes for intelligent action on the problems posed by the truisms. We are agreed that the boys and girls in our high schools constitute a most vital national resource. It follows that our schools have the primary obligations to assay the qualities possessed by these human assets and to provide opportunities for their appropriate development." (43, p. 1)

It is vital that each young citizen be adequately prepared to fit into the world of work or into the next higher educational echelon. Misclassification of students in an educational program is a waste of educational and human resources as well as a detriment to the students' mental health. To increase the probability of appropriate classification, high school counselors need to be able to provide a counselee with an indication of the extent to which his

characteristics are like the characteristics of students who have successfully completed the various curricular choices available to the counselee.

The secondary school represents the educational level at which the first tangible occupational differentiation among students occurs. It is also in the secondary school that the greatest proportionate amount of money is spent to help pupils resolve the many problems contingent upon clarification of the pupils' occupational self-concepts, the roles which they will be expected to play in the occupations under consideration, and the consequences of their particular decisions. It might be expected that differences among pupils who select one or the other of the curricula offered in the secondary school would be the most widely investigated area in the field of vocational guidance; this is far from the case. Many more studies involving college students have been published than studies involving secondary school pupils (12). Among the studies of secondary school pupils, the most frequently appearing are those involving differences among pupils within a single curriculum. There are practically no studies of differences among pupils who select one or the other of the several curricula available in a secondary school. Questions of whether any differences do exist and, if they do, their nature and stability, and whether students succeed in certain curricula because of these differences, have gone unanswered.

The selection of a particular pattern of courses, either terminal or non-terminal, in the secondary curriculum, materially restricts job opportunities which are available to the pupil when he leaves the secondary school. Thus, the selection of a secondary curriculum is occupational determining. Ideally, it would be desirable to provide counselors with information as to the extent that the aptitudes of beginning high school students are like those of persons who have not only completed the required training for an occupation but who have successfully pursued the occupation for a number of years. Before this ideal can be reached, however, it will first be necessary to provide information as to the extent to which beginning high school students resemble those students who have satisfactorily completed the required training in high school in a specific curriculum.

It was the purpose of this study to determine the effectiveness of aptitude test scores when used individually and collectively, for assisting entering high school students to choose their major areas of study. To accomplish this purpose, a group of high school pupils was administered a battery of aptitude tests at the beginning of the tenth grade. These students then made their selection of the curriculum which they wished to pursue throughout high school. Upon graduation the students were classified according to the curriculum which they had successfully

completed. The analysis of twelve test scores resulting from the battery in relation to the successful completion of the various high school curricular patterns was the basis of this investigation.

The following assumptions and hypotheses were postulated for the study of the proposed problem:

Assumptions

1. Individual differences exist which are caused by certain inherited and learned dominant factors within each person.
2. Test scores are valid measures of the characteristics of individuals.

Hypotheses

1. On the basis of single test scores, it is possible to differentiate among high school graduates according to the curricular patterns which they have successfully completed.
2. On the basis of patterns of test scores it is possible to differentiate among high school graduates according to the curricular patterns which they have successfully completed.

CHAPTER II

REVIEW OF RESEARCH

The review of research pertinent to this problem will be divided into three areas: curricular and occupational choice, differential testing, and discriminant function.

A. Curricular and Occupational Choice

There is extensive literature relating to vocational choice, but relatively few concise theoretical formulations regarding this process have been published. In attempting to suggest reasons for the present lack of well-defined theories of vocational choice, Darley and Hagenah (14) suggested four possible explanations: attempts to isolate the individual's occupational life from his total life and his life style; inadequate operational definitions; indeterminate criterion measurements for occupational success; and too much concern with the empiric aspects of the problem.

Meadow (33) has expressed the point of view that many years of empiric research without coherent theoretical structure have resulted in a relatively meaningless mass of isolated variables that have impeded progress. Super (14) reviewed the literature for Ginzberg (25) and his associates before they made a study of vocational choice and felt that the work of prior investigators could not be integrated. For example, Super found one study indicating

that boys tended to enter the occupations of their fathers and another study which refuted this finding.

In this review only those aspects of each theory of vocational choice which have implications for curricular choice will be discussed. The theories will be identified by the name of the originator of the particular theory concerned.

1. H. D. Carter

Carter (10) formulated his theory of vocational choice on a basis of personal dynamics and environmental realities. His position is that vocational attitudes develop in the attempt to make a practical adjustment to environmental conditions. The adjustment of the individual is limited first by external factors, consisting of the individual's familial and social position, and secondly by internal factors of the individual, consisting of physical traits, mental ability, motives, needs, etc. Adjustment is further dependent upon subjective factors which the individual identifies as a process of obtaining satisfactions derived by identification with a respected group. This identification leads to an interest in particular vocational activities. As long as no great discrepancies are felt between ability and the requirements of the vocation, the individual persists with the identification. As the individual adjusts to the complex culture, his experiences offer some basis for the integration of personality. Eventually, a pattern of vocational

interests emerges which becomes closely identified with the self and forms a basis for decisions and planning.

Roe (40) and Super (46) have objected to Carter's theory because studies of interests have shown less variation than his theory would require. They point out that interests tend to be stable and persistent and that any adequate theory of vocational choice should account for both the stability of interests found in some individuals and the variation found in others.

2. E. S. Bordin

Bordin's (6) theoretical formulation of the origin of vocational interests is rigidly designed and amenable to experimental test. Vocational interests are interpreted by him to mean strictly inventoried interests and his data result only from the administration of tests. He feels the vocational goals and aspirations of an individual form one of the mainsprings of his actions. In responding to a vocational interest test, the individual is expressing his acceptance of a particular view or concept of himself in terms of occupational stereotypes. The emerging pattern of interests varies with the degree to which the subject accepts an occupational stereotype as self-descriptive with his knowledge of the true occupational stereotype. Thus, interests are considered as expressions of personality. However, the interest patterns are subject to change whenever the self-concept changes or knowledge of the occupational stereotype changes.

Bordin and Witson (7) reported a test of Bordin's hypothesis dealing with test-retest changes following curricular experiences. Their premise was that curricular experiences affect interest test scores to the extent that curricular experiences reflect changes in self-concepts, and that vocational interests, reflected in curricular choices, are "deviations of central personality factors sufficiently removed from the personality core to be much less resistive to change." This research modified Bordin's earlier position in which he allocated vocational interests to the periphery rather than to the core of personality.

3. D. C. Miller and W. H. Form

Miller and Form (34) conceive of vocational choice as a process of social adjustment. The social adjustment process is delimited by the family's acquired tastes and interests, current status, desires for success, and class expectations. Motivation and ability are given secondary importance in their theory. Miller and Form place considerable emphasis on the social acceptability level of an occupation rather than on specific jobs or clusters of jobs.

According to the Miller and Form theory, a person passes through five work adjustment phases during his lifetime: preparatory, initial, trial, stable and retirement. The preparatory and initial stages occur during the school training period. As the socialization of the child progresses the workers whom the child observes become his primary

models. He watches their behavior and then rehearses it in the world of fantasy or of play. Vocational goals are formed and developed essentially by this role-taking device. When the child enters school the school and peer culture blend together, with the school culture predominating. The school operates as a social system which helps to preserve for some children the status level achieved by their parents and to encourage other children to climb higher within the status system.

The initial stage starts when the student seeks his first job during his school enrollment and continues until he terminates his formal education. This period provides additional job experience and information --- thus, a perspective of the work world.

" ---- individuals find their occupation, their occupational goals through a compounding of work experience, observation, and expectation. Although the advance of scientific testing is notable, it is true that trial and error is more often the process by which workers come to be placed in jobs rather than formal guidance. In fact, the more one studies case histories the more apparent it becomes that accident is the deciding factor in determining the occupation of a majority of workers." (34, p. 651)

4. E. Ginzberg, S. W. Ginsberg,
S. Axelrad, and J. L. Herma

Ginzberg (25) and his colleagues propose that occupational choice is largely an irreversible process, and that compromise is an essential aspect of every choice. They describe three developmental or decision making periods; fantasy (6-11 years), tentative (12-17), and realistic

choice (18 plus). The developmental periods are delimited by the method the individual uses to translate his impulses and needs into an occupational choice. In the fantasy period the child perceives an occupation in terms of his wish to be an adult. In the tentative period, the individual begins to see the problem as one of choosing a specific occupation. The reality period permits the individual to compromise with all that has gone before in his thinking.

Super (47) has criticized the Ginzberg theory on four counts: its neglect of the research literature; its equation of vocational choice with expressed preference rather than with any other definitions such as occupation -- engaged-in or measured interest patterns; its false distinction between choice and adjustment; its failure to describe adequately the process of compromise that is an essential element in the theory.

Small's (45) findings resulting from an intensive clinical study of a group of adolescent boys did not support Ginzberg's theory. In this study the vocational choices made by well-adjusted boys were compared to the vocational choices made by emotionally-disturbed boys. Using an analysis of the reality-and-fantasy contents of choices, it was found that reality factors and fantasy drives operated simultaneously at all the ages studied (15 through 19).

In evaluating the Ginzberg theory, Whitla (66) stressed the point that the primary function of a vocational theory is to direct research towards the crucial problems of

vocational choice. He then indicated that although Ginzberg's formulation stresses the need for a longitudinal research program in vocational choice, the author neglected to discuss experimental designs or variables to be considered in such research.

Case's (11) findings resulting from a study of students who evidenced definite occupational goals and students who did not have definite occupational goals, found data partially supporting the Ginzberg hypothesis in that these types of groups should be treated as different behavioral entities. Other data reported by Case did not support Ginzberg's hypothesis that the group who did not have definite occupational goals had different emotional needs than the group who evidenced definite occupational goals.

5. D. E. Super

Super (47) has proposed a theory of vocational choice which is organized around a set of comprehensive summary statements:

- "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 late 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 socioeconomic level, his 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 the various roles, and evaluations of the extent to which the results of 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 type of work, a work

situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate." (47, pp. 189-190)

It is evident that in Super's theory vocational choice is considered as one aspect of vocational adjustment which is a part of personality development. His theory embraces a broad range of factors as determinants of behavior.

As indicated previously, Whitla (66) has contended that an adequate theory of vocational choice should direct research toward crucial problems, and that it should also provide a well-structured format which will help counselors assist individuals in the process of choice. On this basis Carter, Bordin, Miller and Form, Ginzberg and associates, and Super have seemingly failed to provide a satisfactory theory of vocational choice.

If the primary function of theoretical formulations is to direct research, Bordin's and Super's theories seem to have the most amenities for the purpose of this study. Super's theory is preferred to Bordin's in this study in that it is more definitive. It postulates that people differ in abilities, interests and personalities, that occupations require different psychological patterns, that there is an overlap of attributes for certain occupations and that individuals pass through a particular life stage at which time there is a process of compromise between individual and social factors as interests and abilities mature.

B. Differential Tests

Within the past decade there has been increasing pressure exerted by trained counselors on test constructors to provide multi-factor tests for individual guidance purposes. Counselors look to tests for the differential measurement of the various aptitudes that are related to academic and vocational success. Cronbach, as well as the American Council on Education (18), however, have emphasized the limitations of multi-factor test batteries. The inference which they make is that several factors are effective only when regression equations are constructed for the prediction of a criterion within a single institution. The extent to which Cronbach's criticism of the multi-factor tests is justifiable has been the topic of a series of articles in the Journal of Personnel and Guidance by Super (48) and differential test authors (4, 13, 17, 26, 29).

For the purposes of evaluation of the multi-factor test batteries, Super (49) and Tucker (59) have both formulated desiderata for guidance tests.

"Tests for use in counseling should 'describe' a person so that we can see him as he is at the time of testing; they should 'predict' what he will be like and what he will do at some future date; they should be relatively 'timeless'; and they should, be 'multipotential'." (49, p. 10).

One consideration in the use of multi-factor tests involves the grade level at which they are introduced. North

(36) does not feel that factor scores have any practical advantages over general intelligence test scores at the lower grade levels. Garrett's (23) findings indicate that intelligence factors are relatively undifferentiated among young children and that mental abilities do not tend to become specialized until adolescence or early childhood. Vernon (60) points out that the relation between the pattern of mental organization and chronological age is not clear-cut and the research data in this area are difficult to interpret because the variables of group heterogeneity and appropriateness of test content for different grade levels are not adequately controlled.

The importance of the nature of the tests to be included in a differential test battery has been stressed by Super (49). The test constructors have not uniformly striven for factorial purity. The approaches have been to measure pure factors in some instances and constellations of closely related factors in other instances.

Various aspects of the problem of differential prediction have been treated by Brogden (8), Mollenkopf (35), Thorndike (52), Tucker (59), and Wesman and Bennett (64).

From the analysis of the first six (of eight to be reviewed in a series) multi-factor test batteries that have been considered by Super, none has fulfilled the criteria optima. This does not preclude the use of multi-factor test batteries. Consistent with all good testing and guidance

programs is the provision for periodic and definitive evaluation, as well as careful and continuous utilization within present knowledge. Longitudinally evaluated, the strengths and weaknesses of these batteries can be determined for purposes of maximum improvement of usefulness.

C. Discriminant Function

Traditionally, the approach to most problems of classification and selection has involved the use of multiple regression, multiple and simple correlation and factor analysis. Multiple regression requires the assignment of individuals to various points along a criterion continuum (called an ordered or quantitative criterion), and the determination of a linear combination of a set of measurements of a sample of individuals taken prior to their entry into a job or curriculum which maximizes the product moment correlation between the assigned criterion score and that estimated by the linear combination.

Whenever the criterion is internal, factor analysis is employed to reduce the number of variables to be considered with a minimum loss of differentiating magnitude.

The discriminant function is analogous to multiple regression, but the difference lies in the nature of the criterion which is unordered (qualitative) rather than ordered (quantitative). The practical considerations of the two methods when a set of data for several groups of people is given involve two different determinations. The