R842-05 ERIC REPORT RESUME

ED 010 282 2-28-67 24 (REV)

CAREER DEVELOPMENT.

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CRP-1221
BR-5-0088
- -66
EDRS PRICE MF-$0.45 HC-$12.08 302P.

*LONGITUDINAL STUDIES, *CAREERS, CAREER CHOICE, CAREER OPPORTUNITIES, CAREER PLANNING, OCCUPATIONS, *SEX DIFFERENCES, *COUNSELING, *VOCATIONAL COUNSELING, COUNSELING PROGRAMS, COUNSELORS, COUNSELING GOALS, WESTON, MASSACHUSETTS, READINESS FOR VOCATIONAL PLANNING SCALES

A LONGITUDINAL STUDY WAS UNDERTAKEN TO ACHIEVE THE FOLLOWING OBJECTIVES--(1) TEST THE THEORY OF OCCUPATIONAL CHOICE WHICH PROPOSES A PROCESS RUNNING THROUGH A SEQUENCE OF DEVELOPMENTAL STAGES, (2) DETERMINE WHETHER THERE ARE SIGNIFICANT SEX DIFFERENCES IN CAREER SEQUENCES, (3) DESCRIBE IN DETAIL 111 REAL CAREER PATTERNS OVER 8 YEARS OF DEVELOPMENT, AND SEEK UNIFYING MATHEMATICAL AND PSYCHOLOGICAL MODELS FOR THEM, (4) DETERMINE THE EXTENT TO WHICH CAREER DECISIONS ARE BASED UPON SELF-CONCEPT AND OTHER FACTORS, (5) ACCOMPLISH A SUCCESSFUL MULTIDIMENSIONAL SCALING OF EARLY VOCATIONAL MATURITY FROM INTERVIEW PROTOCOLS AND NAMING THE RESULTING SCALES READINESS FOR VOCATIONAL PLANNING (RVP), AND (6) EXPLORE THE STATISTICAL DEPENDENCE OF NUMEROUS CRITERIA OF CAREER DEVELOPMENT ON THE RVP SCALES, WITH THE CRITERIA BEING COLLECTED IN 3-, 5-, AND 7-YEAR FOLLOWUP INTERVIEWS. OBJECTIVES OF THE STUDY WERE MET. THE AUTHORS BELIEVED THAT THIS STUDY OF 111 CAREERS IN PROGRESS, OF BOTH SEXES, OVER 8 YEARS SHOULD BE AN ASSET TO GUIDANCE COUNSELORS AND CAREER PSYCHOLOGISTS. (JC)

CAREER DEVELOPMENT

Cooperative Research Project Number 5-0088
(CRP 1221)

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1966

The research reported herein was supported by the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education and Welfare

ACKNOWLEDGEMENTS

The first phase of this research was supported by a grant from Educational Testing Service and the Rockefeller Brothers Fund. Dr. Benjamin Shimberg, Dr. Martin Katz and Dr. Raymond Hummel helped the senior author in his planning for the initial phase.

The theoretical formulations and research activities of Dr. Donald Super provided the primary inspiration for this study. Also, Dr. Super provided access to the data-collection instruments of the Career Pattern Study.

Both authors developed their interest in vocational psychology as students of Dr. David Tiedeman. They have sought his counsel on several occasions in the first seven years of this study.

The cooperation of the School Superintendents, Principals, and Directors of Guidance in the Massachusetts communities of Beverly, Newton, Revere, Somerville, and Stoneham made the data collection for this study possible.

Data analyses were conducted at the Computation Centers of Massachusetts Institute of Technology, University of New Hampshire, and State University of New York at Buffalo.

The opportunity to report results of the study has been afforded by the editors of *Journal of Counseling Psychology*, *Journal of Educational Psychology*, *Personnel and Guidance Journal*, and *Vocational Guidance Quarterly*.

The senior author's wife, Jean Gribbons has made many contributions, formal and informal.

Mrs. Gail Hofmann prepared the manuscript with painstaking attention to design and detail.

ACKNOWLEDGEMENTS

(Continued)

The one hundred and eleven boys and girls, now men and women, who were interviewed repeatedly have done most to make this study possible.

To all these and others, the authors express their sincere gratitude.

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CHAPTER ONE

Framework of the Study

Career Psychology in the Mid-Fifties

The major purpose of the longitudinal study to be reported in this monograph is to test and contribute to a growing body of knowledge on career development, which will be reviewed very briefly here. It is not our intention to provide a complete review of the literature on career development, as this has been done admirably by other writers (e.g. Holland and Katz), but rather to focus on those theories which have influenced this study's general direction and methodology since its inception in 1958 (Holland, 1964; Katz, 1963).

It is impossible to discuss however briefly current theories of career development without acknowledging the great contributions made by Frank Parsons (1909), director of the first vocational guidance center in the United States. In 1909 Parsons provided the first theory of vocational choice which embraced three broad factors: (1) clear understanding of self, (2) knowledge of the requirements of occupations, and (3) "true reasoning" about the relations between two groups of facts.

Although some elements of theory were set forth by psychologists following Parsons, little formal theory construction was done until 1951 when Ginzberg and his associates, claiming that vocational counselors lacked a theoretical structure for their counseling, set forth a complex scheme in which occupational choice was embodied as a process running through a sequence of developmental stages. Ginzberg,

whose findings were based on a cross-sectional sample of 64 boys, considered movement through these stages to be basically irreversible, i.e. the adolescent makes a commitment of time and "self" to a particular course of training and work experience from which it becomes increasingly more difficult to deviate. Further, Ginzberg conceived this commitment to have been arrived at as the result of gradual compromise between one's interests, capacities, values, and opportunities. The first of the three stages he delineated as the fantasy period in which children up to age eleven were unaware of the barriers standing in their way. Next came the tentative period during which the individual's choices are based almost exclusively on subjective factors and is subdivided into four stages: (1) interest stage--sixth and seventh grades, (2) capacity stage--eighth and ninth grades, (3) values stage--tenth and eleventh grades, (4) transition stage, shifting from subjective factors to reality--twelfth grade. The third period is characterized by an emphasis on reality conditions and is divided into three stages: (1) exploration--first year of college, (2) crystallization--remaining college years, (3) specification--fourth year of college on (Ginzberg, 1951).

Super (1953) hailed Ginzberg's theory as an important contribution, but he traced the ancestry of the theory to show that its elements were not unknown in the earlier work of vocational psychologists. Super listed the main limitations of the Ginzberg theory as: (1) a failure to build adequately on previous work, (2) considering "choice" as preference which means different things at different age levels, (3) a failure to study and describe the compromise process. Super says the compromise process is the crux of the problem of occupational choice

and adjustment; the counseling psychologist must know the factors which must be compromised, how these have been compromised by others, and the dynamics of this process. He then summarized ten propositions which he felt would serve as a framework upon which a theory might eventually be constructed. These propositions emphasized that career development is a process extending over a long period of time, involving one's abilities, interests, personalities, and influenced by a multitude of psycho-social forces which require compromise all along the way. During this process of choice and adjustment the youngster develops a self concept, which is fairly stable from late adolescence to late maturity. Super views this as an orderly process, which can be guided by facilitating the process of maturation of abilities and interests and aiding in the testing of reality. He later outlined the five life stages and their substages encountered in this process (Super, 1957b). The first of these stages, Growth Stage, covers the period from birth to age 14 and is subdivided into (1) Fantasy--ages 4 to 10, (2) Interest--ages 11 to 12, and (3) Capacity--ages 13 to 14. The Exploration Stage, ages 15 to 24, included (1) Tentative--ages 15-17, (2) Transition--ages 18-21, and Trial--ages 22-24. This is followed by the Establishment Stage, sub-divided into Trial, 25 to 30 years, and Stabilization, for age 31 to 44 The Maintenance Stage continues from 45 to 64 years and is followed by Decline from age 65 on. The Decline Stage is subdivided into Deceleration from 65 to 70, and Retirement from 71 on.

More recently, Super has delineated several "coping behaviors" which describe the individual's responses as he encounters the vocational-developmental tasks of the exploratory and establishment stages (1964).

These behaviors include: (1) floundering, in which the individual moves from one occupational or industrial ladder to another, (2) trial, in which he moves from one related job to another, (3) stagnation, or staying in a job not suited to one, (4) instrumentation, in which he takes training or an entry job to prepare for a particular occupation, and finally (5) establishment, which consists of achieving stability in an occupation but does not involve stagnation. Super's types of behavior may be used as criteria for assessing career success. He differentiates career success from vocational success which, he says, is usually measured by status in an occupation or earnings rather than smooth progress through the stages of a developing career.

In a series of career studies, Tiedeman and his associates have supplemented Super's work by focussing on vocational self concepts also. Perhaps Tiedeman's outstanding contribution has been a metholological one, in that he pioneered in the application of the multiple group discriminant function analysis to curriculum and vocational group membership data (1952, 1953, 1954). Since discriminant analysis has been the primary method of the predictive validity studies of the present research, the authors' debt to Tiedeman is obvious. In researching an area of human development in which the objective criterion variables are frequently categorical variables of the nominal and ordinal types, rather than continuously measured traits, and in which the predictor variables must be treated as multidimensional sets, or personality profiles, the problems of adequate statistical designs have been as serious as the problems of adequate theoretical orientation. Conventional multiple correlation methods cannot cope with categorical criterion variables,

such as vocational group memberships provide. Discriminant analysis establishes the statistical significance of the separation of groups in a measurement space, as estimated from sample data, and generates the best linear functions of the measurements for separating the groups. It is a heuristic, or theory-creating procedure, in that the fitted linear functions locate the personality variables which are most relevant to the career criterion. Thus it is a sort of criterion-oriented factor analysis of a personality space. This type of heuristic analysis of data returns far more to the scientist than conventional statistical inference procedures, such as analysis of variance. A fitted linear function of measurement variables, which represents a theory for the relationship of those variables to the criterion, is far more useful than a bare rejection of a null hypothesis. Of course, the multivariate analysis of variance is a part of a complete discriminant analysis strategy, as is the computation of classification hits and misses, which demonstrate the practical value of the degree of discrimination among the groups achieved. Rulon, Tiedeman, Tatsuoka, Bryan, and Langmuir, operating out of the Graduate School of Education at Harvard University in the early 1950's did vocational psychology a real service in introducing the discriminant strategy.

The above discussion does not begin to do justice to what these outstanding theoreticians have said about vocational development, but it is hoped that it will serve as a framework within which to consider the present study.

Objectives of the Study

One of the most serious frustrations facing guidance counselors today is their inability to predict what the future holds for their counselees. Predicting the future has fascinated people, great and small, through the ages, but neither astrology nor phrenology nor palmistry have been able to lift the burden from the counselor. What happens when a guidance counselor cannot help a floundering youngster make the proper curriculum decisions he is forced to make even as early as the seventh or eighth grade? Thousands of youngsters fail to select a curriculum leading to those occupations which are commensurate with their abilities, interests, and values, and are lost to the technical and professional fields in which they are needed. The loss to the nation's manpower resources is tremendous, but equally as important (or far more important from the point of view of the guidance counselor, psychologist, and psychiatrist) are the frustrated, unhappy individuals who discover too late that they have failed to achieve a career which would make them happy, well-adjusted, contributing individuals.

The traditional guidance approach has been to help the pupil acquire information about the world of work and to match his traits with the requirements of specific occupational fields. This approach often fails because there is insufficient knowledge available concerning which traits are generally common to a particular occupational field. Also, it fails to recognize the social pressures exerted on the youngster, and that interests and values may not have stabilized for some youngsters who are asked to make these vital decisions and choices. That these are

vital decisions and choices cannot be questioned or denied because they determine and delimit not only career, but the youngsters entire life style.

The concerned guidance counselor today realizes that, even were his work load held well below suggested minimums and his training the best possible available, he still would be unable to achieve his goal of giving valuable assistance to many of his counselees simply because there is not enough known about the hows and whys of careers. In this rapidly developing age of ever more sophisticated computers and statistical techniques, we may have arrived at the point where it is possible to predict the future with a far greater degree of accuracy than has ever been possible in the past. The study to be presented in this monograph attempts to combine that most basic of all guidance techniques--the repeated personal interview--with some new statistical techniques.

The longitudinal study has had the following specific objectives:

1. Test the theory of occupational choice which proposes a process running through a sequence of developmental stages.

2. Determine whether there are significant sex differences in career sequences.

3. Describe in detail 111 real career patterns over eight years of development, and seek unifying mathematical and psychological models for them.

4. Determine the extent to which career decisions are based upon selecting self-concept and other factors, answering such questions

as:

> What is the role of intelligence in choosing, entering, and remaining in an occupation? What is the role of values in making choices? What is the impact of value shifts as they occur with maturation? What effects do familial and societal pressures have in shaping occupational aspirations?

5. Accomplish a successful multidimensional scaling of early vocational maturity from interview protocols, naming the resulting scales, as a set, Readiness for Vocational Planning (RVP).

6. Explore the statistical dependence of numerous criteria of career development on the RVP scales, with the criteria being collected in three-, five-, and seven-year follow-up interviews.

In retrospect, the authors believe that the present monograph demonstrates that all of the objectives of the study have been achieved. The research experiences to be reported in the following chapters have convinced them of the inestimable value of longitudinal data. Naturally, they have frequently wished they had more subjects. Probably they could not have persisted in the employment of interview technique in the follow-ups if they had been working with a larger sample. In their judgment the interviews have produced data of a quality and a completeness which could not have been matched using questionnaire technique. Not one subject has been lost in the eight years of this study. By way of contrast, Project TALENT, which is the major longitudinal study employing questionnaire technique, has suffered losses of approximately

fifty percent of sample in its first out-of-school follow-ups. The rapport generated by the interview technique has not only preserved contact with all subjects. It has also encouraged a sincerity of response which questionnaires cannot evoke. Thus, while the pursuit of the specific objectives of the study has led to important theoretical, measurement, and methodological innovations, to be reported fully, it seems that one contribution to the literature of unquestionable value to other career psychologists is the detailed presentation of 111 careers in progress, of both sexes, as viewed on four occasions spaced over eight years. Only a longitudinal design could yield such a view of real careers.

CHAPTER TWO

Managing a Longitudinal Study

In the spring of 1958, the senior author undertook to evaluate the short-term effect of a group guidance unit, *You: Today and Tomorrow*, written by Martin Katz (1958) for the Guidance Inquiry of Educational Testing Service. This study was supported in part by the Rockefeller Brothers Fund and in part by Educational Testing Service, Princeton, N.J. This unit stressed the psycho-social approach to group guidance and assumed that most pupils progress through a series of developmental stages. The results of this study were impressive (See Gribbons, P&GJ, May, 1960), and indicated that the group guidance experience was effective.

Because the interview used in 1958 with the 111 eighth grade pupils yielded so much information potentially valuable for a longitudinal study, the senior author applied in 1961 to the U. S. Office of Education for financial support to enable him to follow the developing careers of these young people. It was recognized that the limited sample size was a distinct disadvantage, but the senior author decided that it might serve as a pilot study to indicate whether the added expense and time required for a longitudinal study would yield enough to justify using this methodological approach with a far greater sample in the future. This assistance was granted and plans were made to follow the group at least until high school graduation plus two years. This, then, is a report on the emerging careers of 57 boys and 54 girls from the eighth grade to two years past high school. Incidentally, the authors hope to follow these subjects for at least another five years.

Communities

It would have been possible and simpler to secure the entire sample of youngsters from only one community, but it was hoped that the selection of several communities would insure a useful sampling of diverse urban communities. Also, the inclusion of several cities would insure against the possibility that the hopes and aspirations of many of the youngsters could have been molded by admiration of one outstanding figure in the community or the school, or that the youngsters might be influenced by living in a one industry or depressed industrial town. The wisdom of this decision was made clear when a number of youngsters in a community with one main industry expressed a hope or desire for employment there in one capacity or another.

It was recognized at the outset, however, that it would be impossible to achieve a random sample of communities for the investigation; the schools had to be within a maximum radius of twenty-five miles from Boston because of the time and expense involved in travel, and only those schools expressing a willingness to participate in the project could be included. Using these criteria, five communities were selected. They ranged from a residential town with a population of 13,299 to an industrial-residential city with a population of 102,351. The median incomes showed a similarly wide range--from a low of $2,991 to a high of $3,848. (Mass. Dept. of Commerce, Div. of Research, Mono. 1958) Comparisons of the communities with U. S. census data (U. S. B. C., 1953) for expansion of population, schooling, occupational groups, and income indicated that, in most respects examined, the sample cities as a whole did not differ greatly from national trends. The sample communities did tend to have a somewhat

higher educational level, but a fair representation of urban population does seem to have been achieved.

The expenditure of time and effort necessary to conduct personal interviews severely limited the number of subjects included in the study. To insure against a sample of less than 100 because of possible high attrition a total of 111 students were chosen. The names of all boys and girls in each of the nine participating classes were arranged alphabetically and then assigned consecutive numbers. Twelve to fourteen pupils were then selected from each class by means of a random number table totaling fifty-seven boys and fifty-four girls. The ages, I.Q.'s, and socio-economic status of the youngster are given in Table 2.1, and will be discussed in some detail in the following pages.

It was recognized that the inclusion of both sexes in a sample of this size involved some risks, but careful consideration indicated it was both feasible and necessary. Up to that time, little or no attention had been given to the career development of girls. Do they also go through developmental stages? If they do, are they similar to the stages delineated for boys? If they differ, how effective is their counseling when boys and girls are not treated differently? Answers to these questions are essential for at least two reasons: (1) girls are maintaining, and indeed are encouraged to do so, careers outside the home in ever greater numbers, and (2) girls who marry and remain at home exert a possibly unmeasurable influence on their husbands and children, therefore their hopes and aspirations should be of interest to all concerned vocational psychologists even if some do wish to confine their work to the careers of boys.

I.Q. - Table 2.1 shows the I.Q. measured by the Otis Test, Beta Form, within two years ranges from 88 to 131, with a mean I.Q. of 107.0 and a standard deviation of 9.5. Thus the sample of students had an I.Q. 7.0 points higher than the median I.Q. score of 100 on the Otis Test. In large measure, this difference may be accounted for by selection of students in one school from a homogeneously grouped class with an average I.Q. of 122.

Age - The ages of the subjects ranged from 144 months to 190 months; an average age of 160.3 months with a standard deviation of 7.5 months.

TABLE 2.1

I.Q. and Age Distribution in 1958 (N = 111)

	Mean	S.D.	Range
I.Q.	107.03	9.47	88-131
Age	160.25	7.53	144-190

Socio-economic Status - Hamburger's revision of Warner's scale for rating socio-economic class was used to determine this variable. (Martin Hamburger, *A Revised Occupational Scale for Rating Socio-Economic Class*, New York: Teacher's College, Columbia University, {Duplicated, 1957}). Warner's multi-dimensional scale relied on house, dwelling area, source of income, and occupational for classification. Since occupation is often the only accurate information available in research situations, Hamburger devised a scale which uses occupation of the father, or the

person responsible for the primary source of income, as the criterion for socio-economic class.

Seven classifications ranging from Level One--"high level, high responsibility, usually requiring post-graduate training.."--to Level Seven--"heavy labor not regular or stable...night watchmen..." -- are included in the manual.

Information for socio-economic classification was received from each subject who was asked, in the 8th grade, to name and describe his father's occupation and to tell the training required for that occupation. It will be noted, Table 2.2, that all major occupational groups are included in the sample, and there is a tendency for the occupations to fall at the middle of the scale.

Table 2.2

Distribution of Ratings of Parental Occupational Levels*

Level**	Frequency	Mean	S.D.
1	14		
2	9		
3	14		
4	31		
5	20		
6	21		
7	2		
Total	111	3.945	1.63

*Hamburger
**Level 1 = high level to Level 7 = low level

Subjects in this study are homogeneous to the extent that they participated in an eighth grade group guidance program using the experi-

mental version of *You: Today and Tomorrow*. The authors feel, however, with two years intervening between the first interview and the second interview, this group would not differ significantly from the general population of tenth grade youngsters.

In summary, the sample of students achieved for this investigation appear to represent the wide range of age, intelligence, and socio-economic status expected in eighth grade classes of cities similar to those involved in this study.

Collecting the Data

Full cooperation of the schools involved was absolutely essential because: (1) they had to agree to use the experimental edition of *Y:T&T*, and (2) they had to be willing to allow the youngsters involved to be interviewed twice in the same year. The investigators followed the school hierarchy faithfully down the line in obtaining permission and cooperation; first contacting the Superintendents of Schools, the Directors of Guidance and principals (sometimes in reversed order depending upon the formal structure apparent in a school system), and finally the guidance counselor or teachers who would be involved in the project. In only one school did the investigator encounter an authoritarian-type principal who did not consult (nor allow the investigator to consult) with his teachers before agreeing to participate in the project. At the last minute the investigator discovered the teachers had not been consulted or were unaware of the part they were to play in the study. The resistance evidenced by these teachers when the investigator did meet with them caused him to eliminate that school from the project. In all other cases the

cooperation of all school personnel was excellent and letters of thanks and commendation were sent to the Superintendents of Schools.

Excellent rapport was established quite easily with the students, with very few exceptions. These seemed to be due to a. bad timing, e.g. a youngster was called for the interview during a favorite period or an exam; b. initial anxiety, e.g. a youngster was very apprehensive because he "had never been called to the office unless he was in trouble," or he had been told he was to meet with a psychologist or was to take a special "test." In <u>almost</u> all cases, however, the interview was completed and all subjects agreed at each meeting to continue to participate in the project and be interviewed two years hence. Several of the subjects expressed delight to the interviewer and to school personnel at being part of the project, happy anticipation of the next interview, and great interest in the progress of the project. Although much of this may be accounted for by a group-membership esprit effect, the retention of the entire group over the seven years would justify some feelings of confidence in the good will established in the interviews.

The investigators anticipated, and indeed did have, some difficulty in reaching some of the subjects when they were no longer part of a "captive school audience." The procedure for arranging the two years out-of-school interviews involved first a letter requesting an appointment, a short summary of the project, and a form to be filled out by the subject stating the time and place most convenient for him. (See Appendix A.) Suggested meeting places included Regis College, the home of the subject, or any other place he chose. Also included was the offer to pay transpor-

tation costs to the College, which, unfortunately, was not sufficiently specific. It should have stated, "reimburse for transportation costs from your home in the Metropolitan Boston Area," because three youngsters inquired whether this meant transportation from schools located at rather distant points. This was very distressing to the investigator because it was impossible for him to finance these trips and it was feared that good rapport might be difficult to re-establish if these youngsters were embarrassed by their requests or angry at our inability to comply. This misunderstanding was completely the fault of the investigator and his explanation and apology were accepted very graciously by all three who agreed to meet for the interviews during their Christmas holidy period. Fifty-one appointments were set up in response to this first letter.

The second step was to telephone each non-responding subject and 60 appointments or addresses were obtained. It was interesting that almost all of these subjects apologized in one way or another for not answering the original letter; e.g. explained they intended to respond after the holidays, said they had not received the letter (a socially acceptable reason for not responding, but confirmed later in some cases), or explained they had intended to respond but had lost the address. In several cases the young people expressed surprise that we were still interested in them because they were "only working" or were married.

In only two cases, both girls, were requests for appointments refused. One mother appeared to be interfering with the telephone communication and we feel that she influenced the refusal. The girl did agree, however, to look over the interview and complete it if she cared to. We were delighted when the completed form was returned in a very

short time. The other girl, who incidentally had always been one of the least responsive of the subjects, agreed readily to complete the interview at home and she responded rather more fully than she had in personal interviews.

Two boys made but did not keep at least two appointments and the interview schedule was sent to them to be completed at home. In one case the boy complained of problems at home, and the other boy's mother explained that he was having difficulties at school and at home.

One boy's parents did not forward his letter to a school a great distance from Boston and, since his holiday period was extremely short, no appointment could be arranged with him. He responded in writing in great detail, however, and requested a personal meeting during the summer holidays.

The final subject within the personal interview range who was most difficult to reach failed to respond to a minimum of a dozen telephone calls and two personal visits to his home, but he did complete the mailed interview schedule. We are at a loss to understand his resistance because he had cooperated well as a student.

Mailed interviews were necessary in the remaining 12 cases because the subjects were located at distances too great for personal interviews, but all completed the forms carefully and, in most cases, in some detail.

Of the 93 subjects who were interviewed personally, 67 were interviewed at their homes, 7 at a neutral place--their schools or libraries, 14 at Regis College, 4 at their places of employment, and one at the senior investigator's home.

CHAPTER THREE

Instrumentation: The Readiness for Vocational Planning (RVP) Interview and Scales

Interview

A standardized personal interview to gather data for study of pupil progress in career planning was decided to be the best possible method for several reasons: (1) it reduces resistance which many youngsters evidence when asked to set down ideas on paper, and provides the subject with a maximal opportunity for self expression and revelation of his thinking processes, (2) it allows the interviewer to establish rapport, to clear up misunderstanding arising from vocabulary too difficult for some youngsters, and to probe for more specific answers and ideas. The limitations of this approach were also recognized; e.g. a pupil's response might be inhibited by the taking of notes and the recording of the interviews, but it was felt that most inhibition would be overbalanced by the demonstration to the subject that the interviewer valued his answers.

One of the first steps in the preparation of the interview schedule was a careful study of the interview and procedures used in Super's Career Pattern Study, which is a longitudinal study concerned with the dimension and measurement of the vocational maturity of boys. Applicable questions were modified to be incorporated into the interview schedule used in this study.

Additional questions were devised to test the pupil's ability to appraise his values, abilities, and interests; to allow him to indicate his knowledge about educational and occupational opportunities and alter-

natives; and to demonstrate his ability to integrate his self appraisal with this information about the educational and occupational worlds.

Following the trial use of the interview schedule with a group of thirty eighth-graders, ambiguous questions were reworded and non-discriminating questions were eliminated. The revised schedule (Appendix B) was given a final tryout on thirty-two additional youngsters before it was used with the youngsters in the study.

Much emphasis was placed on questions designed to motivate the pupil to reveal his ability to integrate his self-appraisal with information about the educational and occupational worlds in making decisions. For example:

Question: What made you decide to take the college curriculum? Actual response from the pilot study: "I want to be an engineer because math has always fascinated me. I've been getting all A's so I'm pretty sure I can handle it."

A second category included purely information-getting questions in order to determine the pupil's awareness of facts outside himself, facts which he must consider before making curriculum or occupational choices.

Questions concerned with the youngsters interests, values, abilities--and the accuracy of their appraisals of these--and their independence of choice were also included.

Because the subjects were moving into a new phase of career development, some changes were necessary in the interviews used in the 12th grade. (Appendix C) These changes were made and tested out with ten youngsters before they were used with the study group.

For the two-year-out interviews, schedules with some variations were required for students, employed, unemployed, housewives, and service personnel. (Appendix D) All, however, sought out essentially the same information regarding the development of the various careers.

Interviewers

To keep the interviewer variable at a minimum, two interviewers completed the 111 interviews at each scheduled interview during the seven years. The senior author has been one of the interviewers in all series, and a total of three others have been involved during the four interviews. These interviewers were trained carefully before they went into the field. Together they listened to and discussed in detail an interview taped during the pilot study. Instructions were given in the use of the tape recorder, and the interviewers were given ample time to become thoroughly familiar in its use. Copies of the schedule, the set of instructions to the interviewer, and the scoring manual (Appendix E) were given to the interviewers to be studied at their leisure before the first interviews. The recorded first interviews were checked; errors and omissions were discussed, and spot checks of subsequent interviews satisfied the senior author that the interviews were conducted in a standardized manner.

Interview Conditions

In all three "in school" interviews, the cooperation of principals, teachers, and guidance counselors was excellent, especially in providing appropriate settings for the interviews. In most schools private rooms were provided, but when it was not possible the youngsters

did not seem to be disturbed or inhibited. The school personnel were most cooperative in making arrangements for pupils to leave their regularly scheduled classes for the time required by the interviews. Conditions were not as good in the two years out-of-high school interviews because the interviews were conducted at a time and place convenient for the subjects. We did suggest Regis College where a private meeting was assured, but only 14 chose that setting. 67 interviews were conducted in the subject's homes and for the most part provided a private setting. In some cases, however, a member of the family remained in the room and may have affected the validity of some sensitive questions; e.g. "What would you do differently?" or "What would you like to get out of life?"; 7 chose a neutral place--a library or school, and 4 asked to be interviewed at their places of work. While the time spent in interviews ranged from twenty minutes to one hour, most interviews were completed in thirty to forty minutes. The interviewers agreed that good rapport existed in most cases and that the pupil's maximum effort was obtained.

Although the interviewers were instructed to take verbatim notes if possible, most interviews were tape recorded and the tapes were checked against the written notes. Important thoughts or idea missed by the interviewers were added to the protocols to insure accuracy in judging responses for scoring.

Scoring Manual

Rather than using an *a priori* selection of responses in devising the scoring manual to assess Readiness for Vocational Planning (RVP), interviews with 52 pupils recorded during the pilot study were employed for this purpose. The answers to all questions were transcribed one to a sheet to be judged and scaled according to goodness and quality of answer. Because of revisions made in the interview schedule during the pilot study, there were fewer than 52 answers to some questions. There were, however, a sufficient number of responses to all questions to allow scaling.

The main criteria for scaling were the logic and consistency of the pupil's use of his appraisal of his interests, abilities, and values. For example, it mattered little whether the pupil stated an occupational preference of doctor, mechanic, or truck driver. Of greater interest were his reasons for choosing a curriculum or occupation. Was he aware of his strengths and weaknesses and their relation to his choice? Was he able to cite relevant data concerning his choice? Was he aware of the relationship between his curriculum and his preferred occupation? Had he chosen a curriculum leading to his occupational choice or allowing him the greatest freedom of choice in the future? Using these criteria, the investigator rated each response and placed it in a pile, representing his judgment of the degree of goodness and quality of the answer. It was found that (with the exceptions of Questions 29, 30, and 31 noted below) responses generally fell into clear-cut categories resulting in three, four, or five point scales.

Questions 29, 30, and 31 ask the pupil to estimate his quartile position for verbal, quantitative, and general scholastic ability as compared with his classmates. It is necessary to use a discrepancy score between the pupil's estimates of his abilities and his abilities as indicated by his English grades, his mathematics grades, and his I.Q. on these questions.

Criteria for assigning scores were then defined and representative verbatim responses were selected and recorded in the scoring manual to provide illustrative materials for the scorer in deciding on the number of points assigned to each response. Following the suggestions of an experienced guidance counselor who scored ten protocols in a preliminary reliability study, the manual was further modified to increase the ease with which interviews could be scored. The final version of the scoring manual (Appendix E) was used in scoring all eighth and tenth grade interviews.

At this point a decision was made to score the interview into a set of eight variables defined by *a priori* logical considerations, rather than to rotate the principal components to a suitable structure. This decision is parallel to that made by the Career Pattern Staff (Super and Overstreet, 1960), and is defended in terms of the meaningfulness of the *a priori* variables in the context of the current literature on vocational development. Considerable empirical evidence in favor of the decision is reported in later chapters. The eight numerical variables scaled from the interview responses, which are considered to represent eight dimensions of a domain of Readiness for Vocational Planning traits, are named and described as follows.

VARIABLE I

Factors in Curriculum Choice:

Awareness of relevant factors, including one's abilities, interests, and values and their relation to curriculum choice; curricula available; courses within curricula; the relation of curriculum choice to occupational choice. (Q's 1, and 3 through 12)

VARIABLE II

Factors in Occupational Choice:

Awareness of relevant factors, including abilities, interests, values; educational requirements for choice; relation of specific high school courses to choice; accuracy of description of occupation. (Q's 15 through 23)

VARIABLE III

Verbalized Strengths and Weaknesses:

Ability to verbalize appropriately the relation of personal strengths and weaknesses to educational and vocational choices. (Q's 24 through 28)

VARIABLE IV

Accuracy of Self Appraisal:

Comparisons of subject's estimates of his general scholastic ability, verbal ability, and quantitative ability with his actual attainments on scholastic aptitude tests, English grades, and mathematics grades. (Q's 29 through 31)

VARIABLE V

Evidence for Self Rating:

Quality of evidence cited by subject in defense of his appraisal of his own abilities. (Q's 32 through 34)

VARIABLE VI

Interests:

Awareness of interests and their relation to occupational choices. (Q's 35 through 38)

VARIABLE VII

Values:

Awareness of values and their relation to occupational choice. (Q's 39 through 42)

VARIABLE VIII

Independence of Choice:

Extent of subject's willingness to take personal responsibility for his choices. (Q's 44 through 46)

Note: Through a misunderstanding Q 43, originally intended as part of Variable I, and Q 47, intended as part of Variable VIII were not included in the analysis. Q's 2, 8, 13, and 14 were used to lead into other A's or information gained from these was used to evaluate other responses.

Reliability

Behavioral scientists who invent new scaling procedures in the course of their substantive research assume the obligation to investigate the reliabilities of those procedures. On the other hand, reliability studies are expensive, and since the reliabilities required of research instruments intended to support generalizations about groups of subjects are lower than those required for individual diagnostic or personal decisions, it is important that the scientist not divert excessive research resources from the pursuit of substantive questions to the inquiry into reliability. In cases such as the present one, where the scaling procedure involves human judgments of the quantitative values to be assigned to free responses made orally by subjects and filtered through some transcription device, quite a few approaches to the definition of and assessment of reliability are possible. The authors opted for an investigation of inter-judge reliability of single item scores, in the belief that if the judge who scored the actual research protocols could be shown to agree closely with an independent judge, he must be fairly consistent, and intra-judge reliability must be fairly high. Moreover, it is certain that additive linear functions have more reliability than the individual items which enter into them, and that the eight RVP scores, each of which is the sum of several item scores, must be more reliable than the separate items.

Before the scoring manual was devised, ten pre-test interviews were selected at random, transcribed, and set aside for purposes of a reliability study. Following completion of the scoring manual, they

were scored by the senior investigator and by an independent judge, who possessed a master's degree in guidance and eight years' experience in high school counseling. The correlation coefficients (45 of them, one for each item) between the two judges over the ten protocols distributed as follows: 30 (67%) were between .90 and .99; nine (20%) were between .82 and .89; and six (13%) were below .82 . As further evidence of inter-judge reliability, all 8th-grade interviews in the research sample (111 of them) were scored twice, once by the senior investigator and a second time by another independent judge (not the same person described above). This time there were nine correlations (20%) between .70 and .79, five (11%) between .80 and .89, and 31 (69%) at or above .90. These inter-judge reliabilities seemed to indicate that responses to most items could be scored with considerable consistency.

The reader who sees in these reliabilities some possibilities for counseling applications of the RVP instrument (as the authors do), needs to bear in mind that both independent judges involved had studied the interview and the scoring manual thoroughly, and in company with the senior investigator. Presumably these reliabilities could be replicated in the field, but only in the presence of such thorough staff preparation.

Had the eight-dimensional RVP battery ultimately failed to display hypothesized predictive validities, the authors might have been plagued by uncertainties regarding the actual degrees and kinds of reliability obtained. Fortunately, the excellent successes in a long series of predictive validity studies involving a variety of criteria leave little doubt that adequate reliability was obtained in the RVP scales.

Validity

Current career theory requires that several classes of career-related criterion variables, including academic decisions, vocational aspirations, and vocational adjustments, be predictable from measures of traits of vocational maturity, such as the Readiness for Vocational Planning traits. It is not surprising, therefore, that a large part of the analysis of the longitudinal data has been concerned with assessment of predictive validities of the 8th and 10th grade RVP scales, and that much of the present monograph is occupied with reports of predictive validity studies, employing criteria from the three-, five-, and seven-year followup interviews. Also, a number of career-related criteria were derived from the 8th and 10th grade interviews, and although these represent concurrent validity criteria in a sense, it seems reasonable to group them under the general rubric of predictive validity findings. A young science such as career psychology must be very anxious to establish predictive validities for its dynamic, motivational, or causal concepts. Certainly vocational maturity is such an explanative concept, and empirical demonstrations of its predictive values are urgently needed. The authors are very pleased with the successes of their RVP scales in this realm, particularly where these have been obtained against criteria representing developmental outcomes appearing several years later than the collection of the predictive indicators.

However, there are other classes of validity to be concerned about. These include face, content, construct, and factorial validity. The authors, having borrowed the concept of a vocational maturity syndrome from the literature, especially from Super, have been very concerned to

demonstrate the construct and factorial validities of their scales for the syndrome. The resulting series of studies, focussed on the requirements that vocational maturity measures display the properties of emergence, persistence, and multidimensionality, are reported in Chapter Four. For the moment, a small exploration of the face validity (or possibly the content validity - it could be either of these) of the interview and the scoring procedure for the items will be narrated.

Early in the game, the senior author undertook to investigate the extent to which colleagues in the field of counseling psychology agreed with him in the use of the concept of vocational maturity when it was applied to protocol material in an evaluative fashion. Vocational maturity is not an objective property of behaviors of youth. It is a scientific evaluation of behavior, or an attribution of meaning to a behavioral record. The immediate issues was whether several scientists would attribute the same meanings to a set of behavioral records, indicating that they possessed something in common in their notions of the evaluative concept. Five interview protocols which had been previously scored by the senior investigator, following the dictates of the scoring manual, and which represented five levels of ability to deal with educational and vocational problems, were presented to five experienced counselors to judge for vocational maturity independently. The judges were not familiar with the investigator's criteria, as reflected in the scoring manual. The sex and school grade of the pupil was specified for each of the protocols, but information such as age and I.Q. was deleted. Each judge was asked to rank the five protocols, without ties, with rank "one" indicating greatest ability to deal with educational and vocational

decisions and rank "five" indicating least ability to deal with such problems. It was assumed that agreement of the five judges with the investigator in ranking of these cases would indicate that the scoring procedure for the interview items reflected some consensus among counseling types regarding the evaluative concept, and not simply the unique biases of the inventor of the instrument. Actually, four of the five independent judges agreed perfectly in their rankings with the ranking based on the scoring procedure, and the fifth judge disagreed only in the interchange of positions for one pair of cases. Thus there was substantial consensus on the assignment of degrees of ability to deal with educational and vocational problems between these judges and the scoring procedure. The theoretical issue involved in the application of the concept-name "vocational maturity" to the judged ability will be discussed in Chapter Ten.

CHAPTER FOUR

Construct and Factorial Validities of RVP

A full discussion of the point of view which the authors have evolved on the theoretical meaning of the "vocational maturity" concept is presented in Chapter Ten. In that place the meaning given the concept by Super is reviewed, and the possible implications of this research for the expansion or revision of the concept are argued. For the moment it suffices to mention three attributes of the concept which must be satisfied by the RVP measures if construct validity is to be claimed for them. A definition of a maturational process obviously requires an expectation of growth with the passage of time. Since certain abilities, values, interests, and knowledges are involved in the syndrome of vocational maturity traits, the concept implies that these traits improve, or grow, as the student ages. Holding in abeyance the important issue of the relative roles of learning, genetic unfolding or true maturation, and social press in the production of this growth, we emphasize for now simply that youth in general (not every person necessarily) must exhibit progress in vocational maturity over time. If certain scales based on behavioral data are to be interpreted as vocational maturity measures, which is the interpretation the authors place on their Readiness for Vocational Planning scales, and if higher numerical scores on the scales are supposed to represent more readiness for planning, as is the case, then retesting of a group of subjects after an interval of two years (eighth to tenth grades) must produce significantly higher group means on the trait measures if construct validity with respect to this attribute of growth is to be claimed. The property of growth or progress is here

termed "emergence."

Another attribute which is a matter of definition of traits in general, and which must be exhibited by vocational planning traits, is persistence. That is, a trait is defined as a behavior pattern which persists for a significant period of time. Thus, although growth and change are expected over time, enough continuity is required to make it unmistakable that what is measured by the RVP scales is a set of traits of personality, not more ephemeral phenomena such as the instrument-generated artifacts which have been called "method factors" by psychometricians. When a group of subjects is looked at twice over a two year interval, construct validity with respect to this attribute of persistence requires that substantial numbers of students exhibit approximately the same patterns, or profiles, of trait scores on the two occasions, even though they may in general exhibit a systematic increase in level of performance. In other words, there should be substantial correlations between the eighth and tenth grade RVP measures for the same students if the requirement of persistence is to be satisfied. There is no conflict with the requirement of growth or emergence, since it is well known that increases in means do not necessarily alter correlations. In the extreme, a constant growth increment achieved by all students over the two years would not disturb the correlation an iota.

Following Super's lead, the authors have conceptualized vocational maturity as a melange of relevant traits from the modalities of abilities, values, interests, and attitudes, thus establishing multidimensionality as an attribute of construct validity. Factor analytic procedures make it possible to test the hypothesis that the items of the

research interview, scored as directed by the scoring manual, provide the ingredients for a number of factors, or independent measurement traits.

Emergence

The making of educational and vocational decisions is of lifetime importance. Seemingly, it would be significant and helpful to know when such decisions should be made. Concerning the timing of choice, there is the familiar demand of vocational psychologists for the delay of one or more years in forced curricular choice. This delay appears more and more difficult to achieve as colleges exert pressure on students to take sequences of courses, necessitating the choosing of some selective courses at an early date.

This phase of the study is concerned with the evidence for the increasing ability of students to deal effectively with crucial educational and pre-vocational decisions as they move from the eighth to the tenth grades.

The same interview schedule was used when the students were interviewed at the beginning of the 8th grade and again late in the 10th grade, covering approximately two and one half years of growth. Responses to both interviews were evaluated with the RVP scoring manual, coded responses were entered on IBM cards, and Fisher's correlated "t" test was used to determine whether interview response scores of the 110 (note that one youngster was a school drop-out and his responses were not applicable to this analysis) students changed to a significant degree from the 8th grade to the 10th grade.

It can be seen from Table 4.1 that changes in RVP behavior were apparent in all eight variables and, as the tests of significance indicate, all but one were significant at the .001 level. Figures 4.1 through 4.8, showing changes in raw score points, give a clearer picture of the 8th and 10th grade scale score distributions.

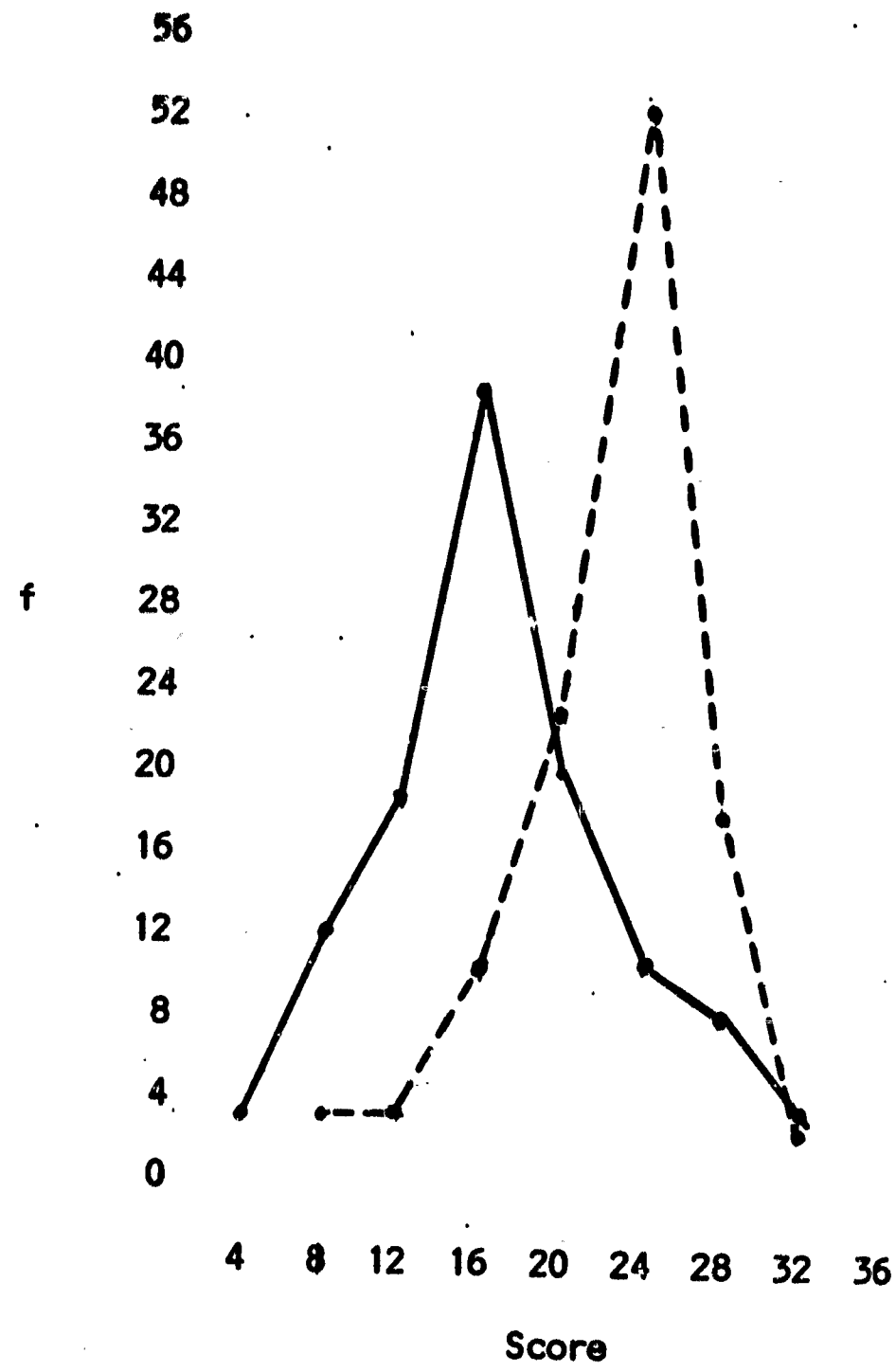
TABLE 4.1

Measures of Readiness for Vocational Planning Increases
(N = 110)

	Variable	Year	Mean	S.D.	"t"	p
I	Factors in Curriculum	1958	15.45	6.20		
	Choice	1961	20.90	4.30	9.20	<.001
II	Factors in Occupational	1958	14.59	4.58		
	Choice	1961	18.28	4.18	7.37	<.001
III	Verbalized Strengths	1958	6.43	3.27		
	and Weaknesses	1961	8.33	3.19	4.93	<.001
IV	Accuracy of Self	1958	7.05	1.41		
	Appraisals-Abilities	1961	7.61	1.20	3.50	<.001
V	Rationale for Abilities	1958	1.46	1.23		
		1961	2.28	1.10	5.60	<.001
VI	Interests	1958	4.10	2.20		
		1961	4.80	2.01	2.97	<.01
VII	Values	1958	3.09	2.54		
		1961	5.49	2.52	7.97	<.001
VIII	Independence of Choice	1958	4.35	1.84		
		1961	5.46	1.68	5.53	<.001

FIGURE 4.1

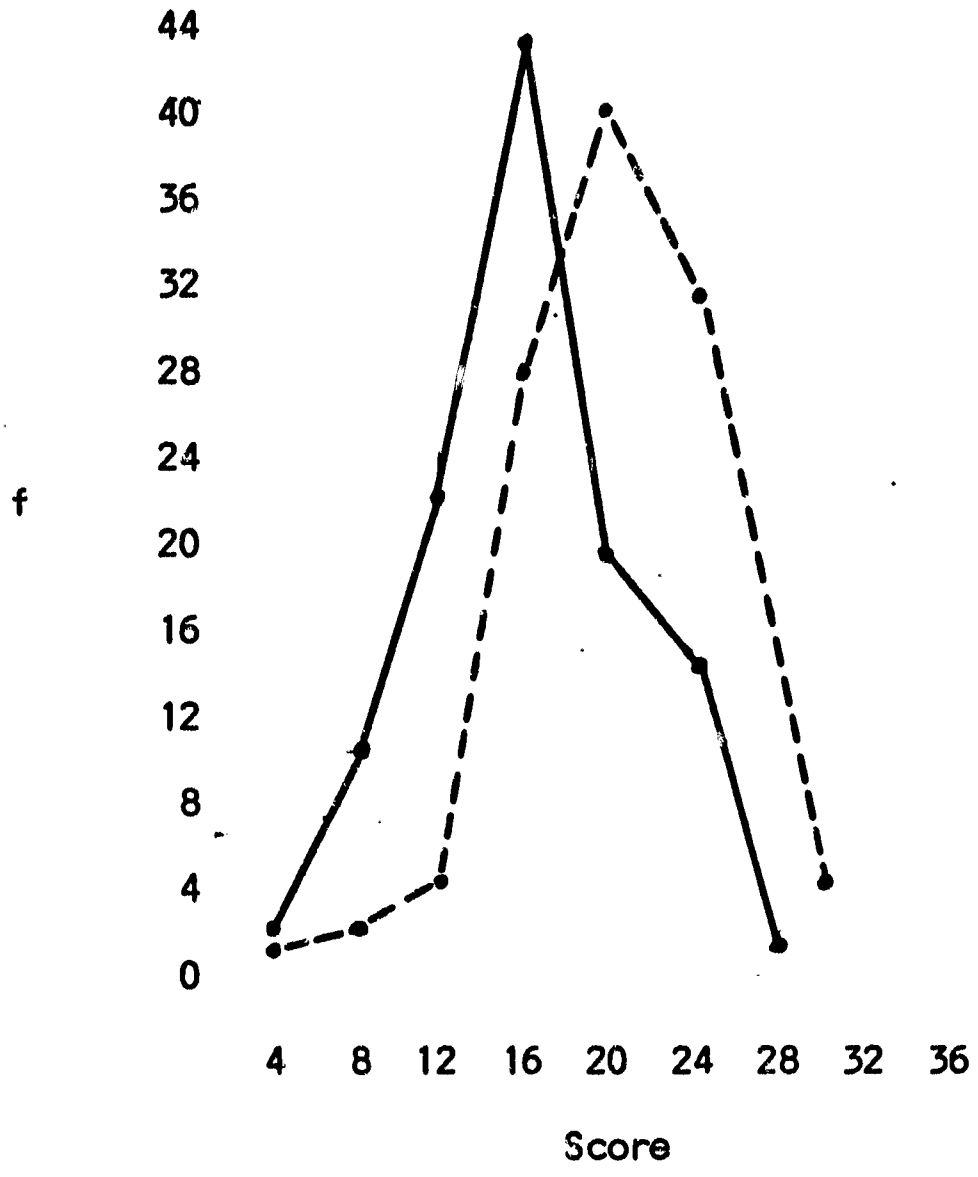
8th and 10th Grade RVP 1, Factors in Curriculum Choice, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.2

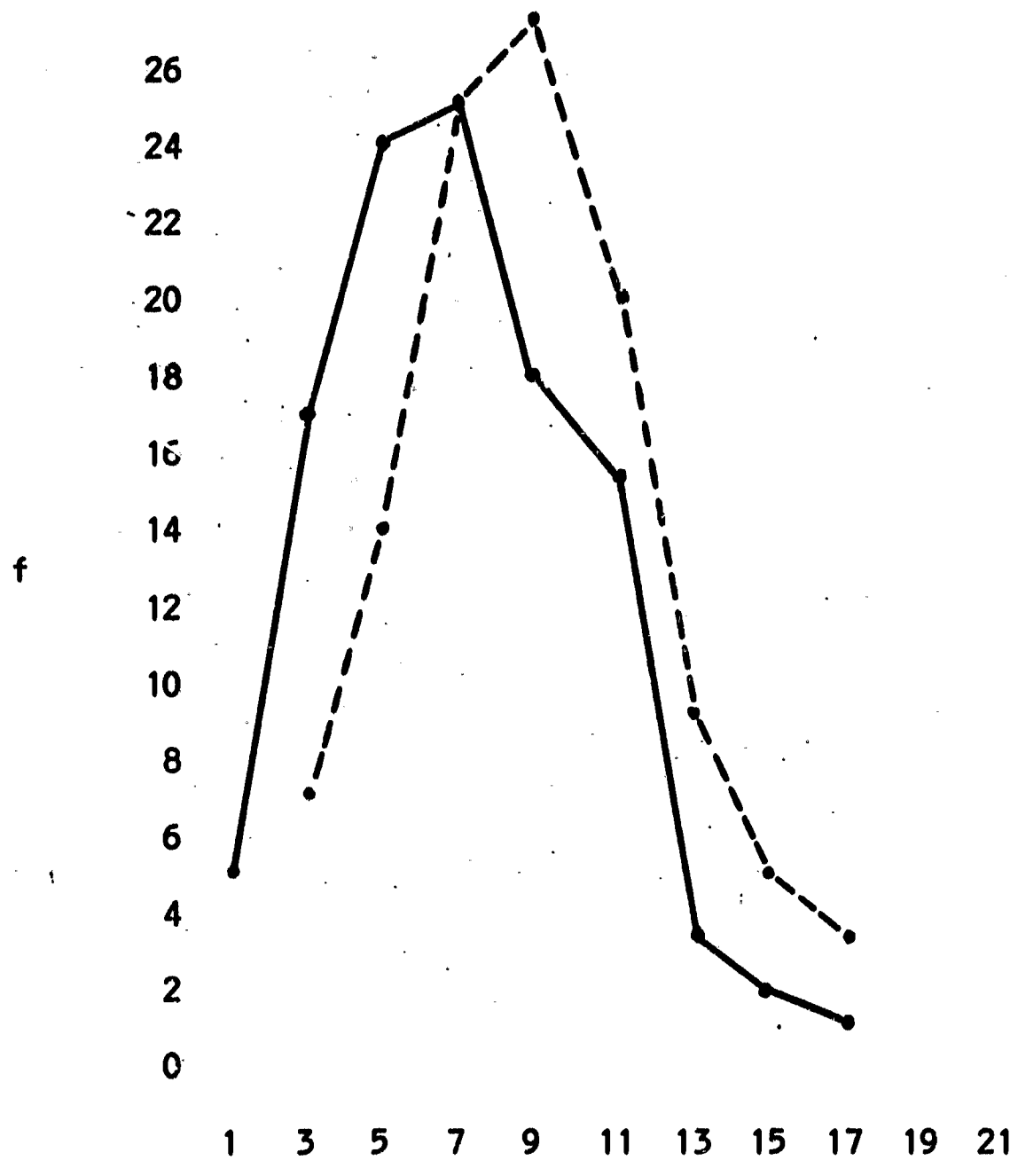
8th and 10th Grade RVP II, Factors in Occupational Choice, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.3

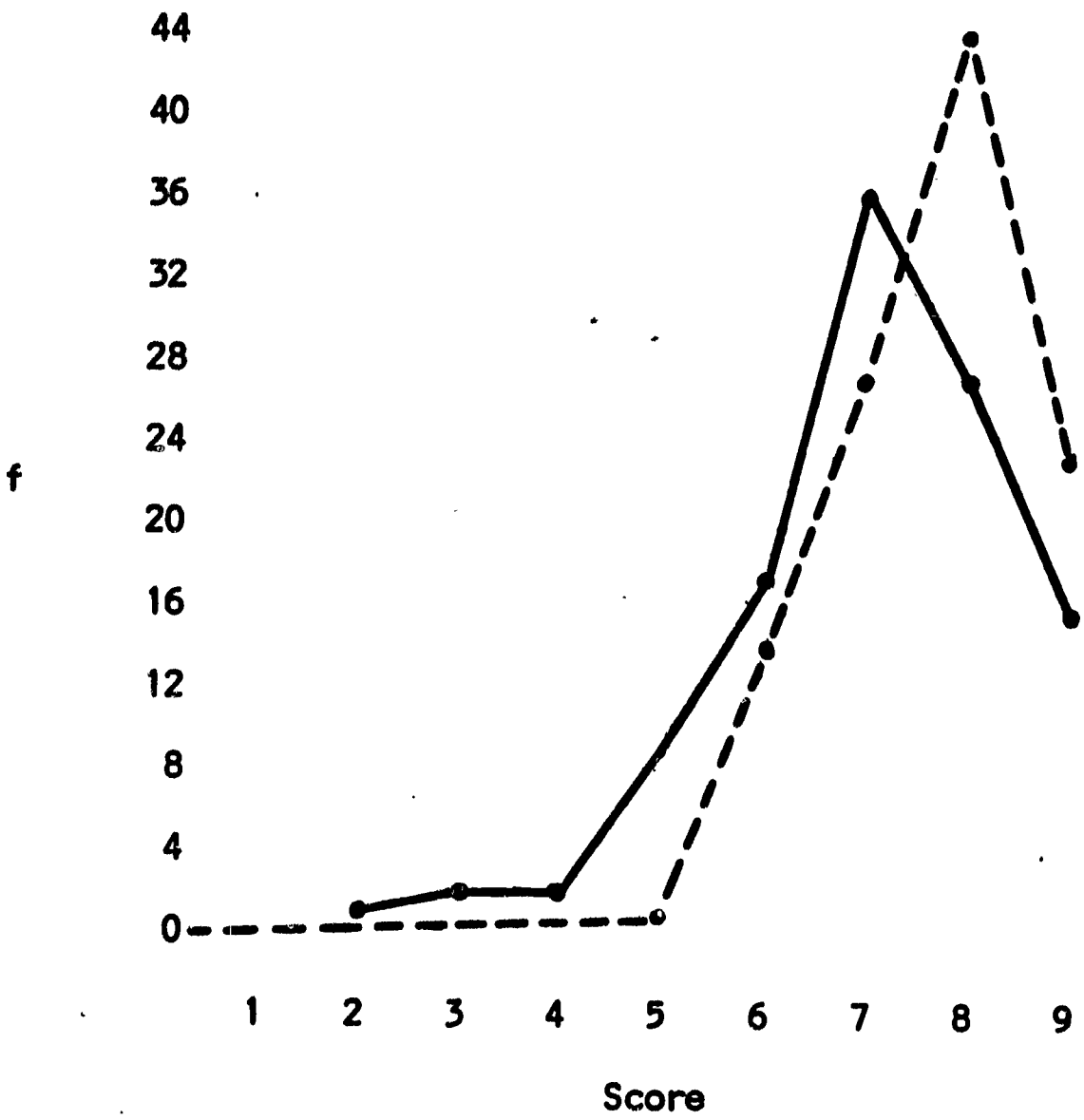
8th and 10th Grade RVP III, Verbalized Strengths and Weaknesses, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.4

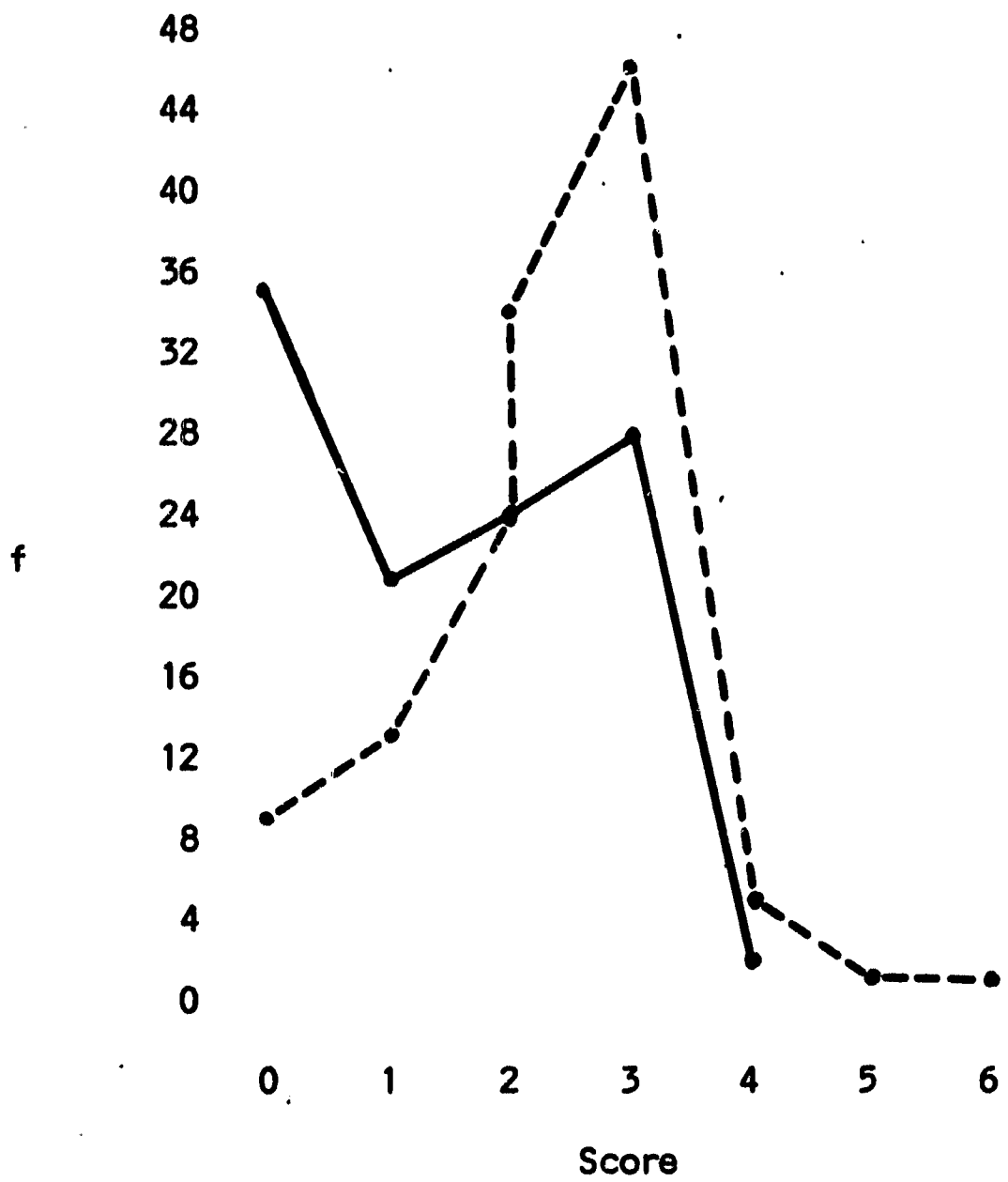
8th and 10th Grade RVP IV, Accuracy of Self Appraisals-Abilities, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.5

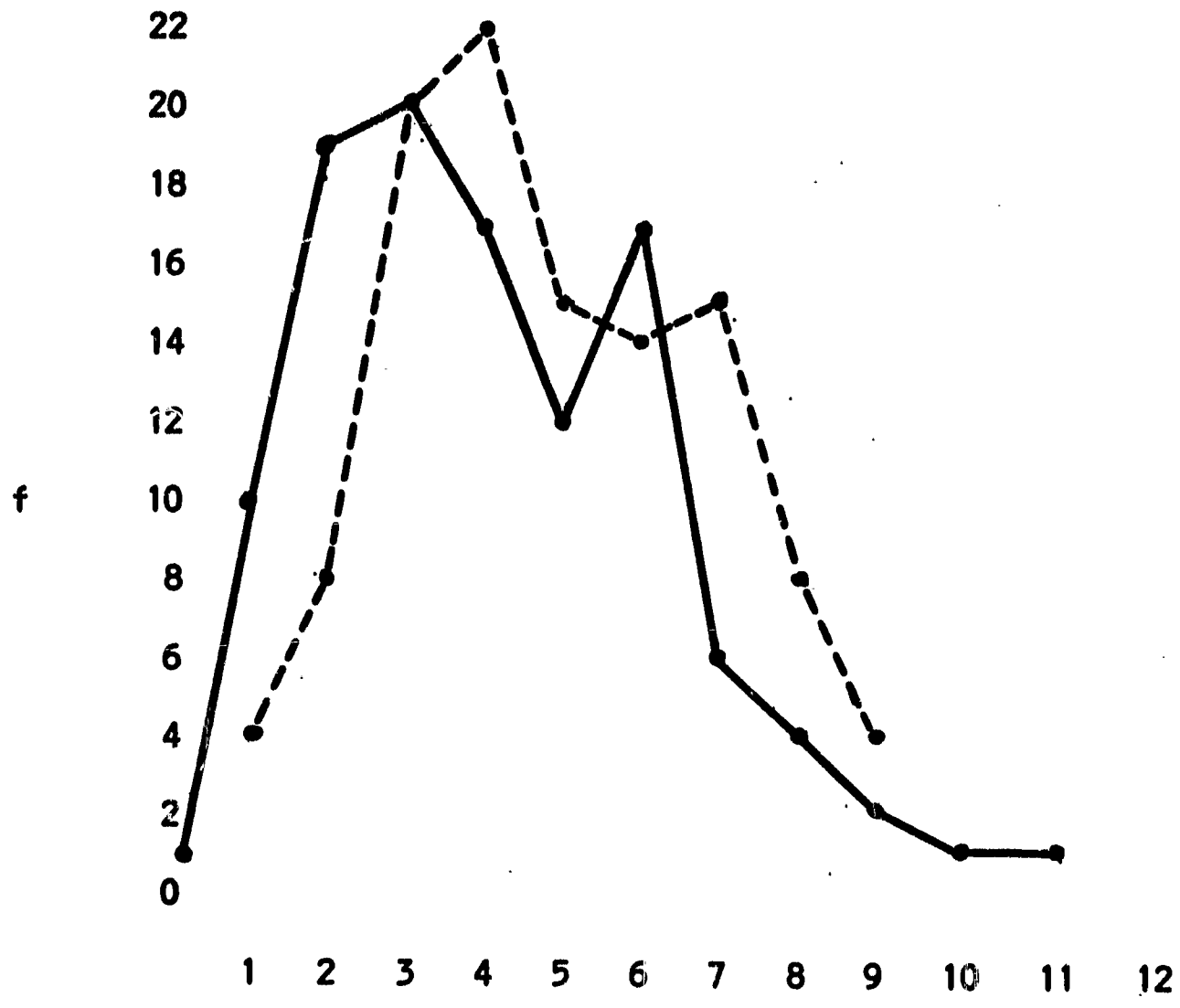
8th and 10th Grade RVP V, Rationale for Abilities, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.6

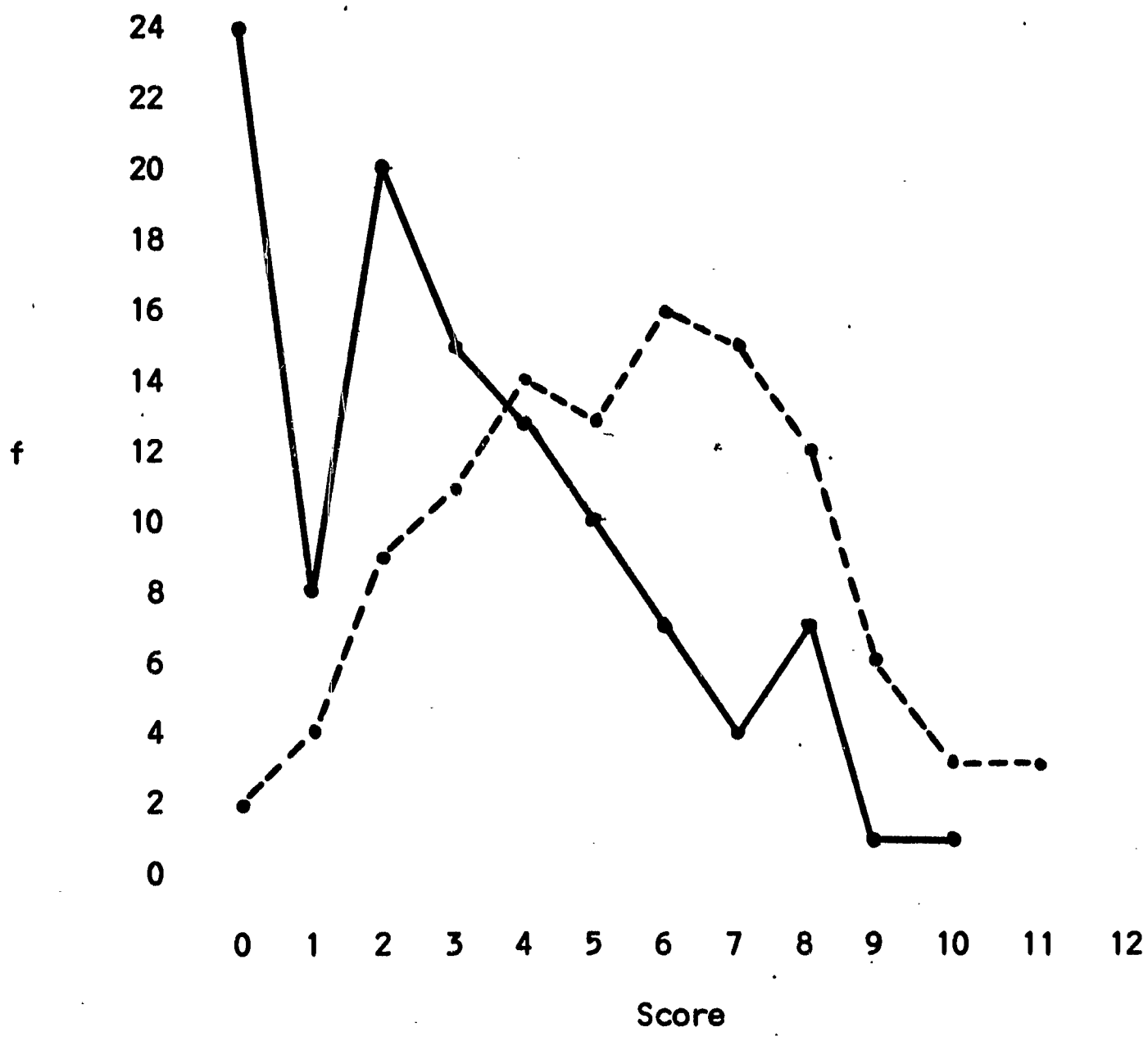
8th and 10th Grade RVP VI, Interests, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.7

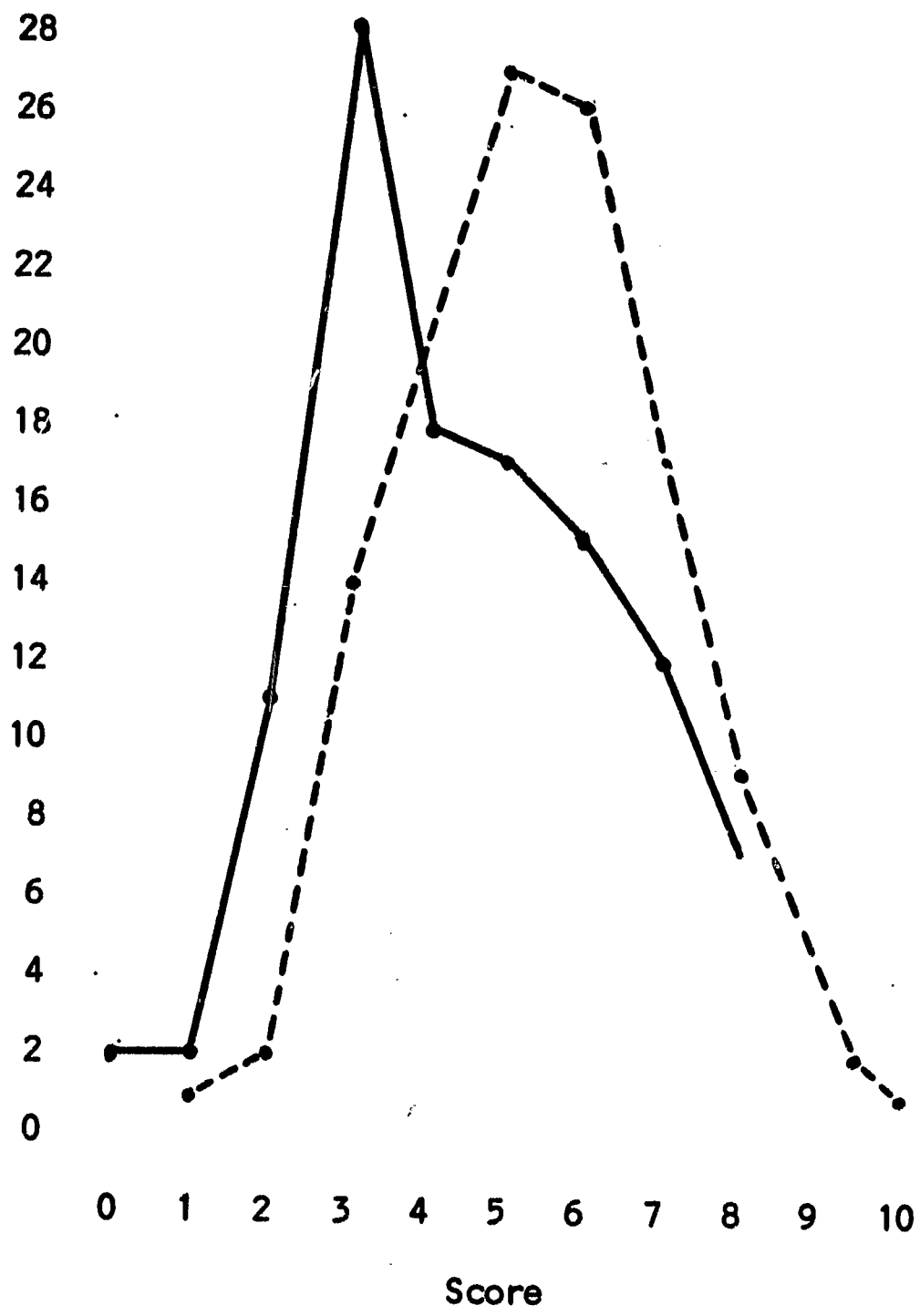
8th and 10th Grade RVP VII, Values,
Score Distributions[1]



[1]8th - solid line; 10th - broken line.

FIGURE 4.8

8th and 10th Grade RVP VIII, Independence of Choice, Score Distributions[1]



[1]8th - solid line; 10th - broken line.

Analysis of the Interview Responses

An examination of Table 4.2 shows that in estimating their

TABLE 4.2

Percentages of Pupils Above and Below Group Means on Eight RVP Variables (N = 110)

	Variable	8th Graders Scoring Above 10th Grade Means		10th Graders Scoring Below 8th Grade Means	
		N	%	N	%
I	Factors in Curriculum Choice	21	19	14	13
II	Factors in Occupational Choice	23	21	17	15
III	Verbalized Strengths and Weaknesses	27	25	35	30
IV	Accuracy of Self Appraisals-Abilities	43	39	42	38
V	Rationale for Abilities	30	27	23	21
VI	Interests	42	38	54	49
VII	Values	14	13	26	23
VIII	Independence of Choice	31	28	28	25

abilities accurately, 38% of the tenth grade students scored below the eighth-grade mean, indicating that their estimates are at least one quartile above or below their actual standings as determined by discrepancy scores.

This inability of a large percentage of tenth-grade youngsters to make accurate appraisals of their abilities should be of concern to educators because: (1) Those students who have underestimated their abilities and chosen other than the college curriculum have shut themselves off from many of the occupations in which they might be happiest and most successful; (2) Those students who have overestimated, although they may have insured the greatest freedom of choice in the future, may be faced with frustration and disappointment.

Examination of Table 4.2 indicates that on six of the eight variables, 21% to 39% of the eighth-grade pupils scored above the tenth-grade means, indicating high RVP as measured by this instrument. Further, 21% to 49% of the tenth-grade youngsters scored below the eighth-grade means on six of the eight variables, indicating low RVP as measured by this instrument.

In Table 4.2 is found another disconcerting fact in that 49% of the tenth-grade youngsters scored below the eighth-grade mean on an understanding of the concept of interests and their relationship to educational and vocational decisions.

It should be noted that the average I.Q. of those students with low RVP in the tenth-grade averages 102.5 for boys and 109.5 for girls, indicating that it is not necessarily "dull" youngsters who are not ready to make educational-vocational choices and plans.

Discussion of Results

On the eight variables measuring RVP, the differences between the means are large enough to permit rejections, with a high degree of

confidence, of the hypothesis that there are no differences between scores made by pupils in the eighth grade and the ones made by the same group of pupils in the tenth grade. On every variable there tended to be an increase in mean differences and a decrease in variability indicating that the group, in general, became more homogeneous on the multidimensional measure of RVP during the two-year span of time included in this report. The results of this statistical analysis would seem to substantiate the demand of many vocational psychologists for delay of one or more years in forced curriculum choice. This delay, however, appears to grow increasingly more difficult to achieve.

The further analysis of the data raises serious doubts about the need for delay in curriculum choices with respect to a rather large percentage of the pupils. For example, many of the eighth-grade pupils scored above the tenth-grade means, indicating high RVP, while many tenth-grade pupils scored below the eighth-grade means. This would indicate the delay may be unnecessary for one group and the other group apparently would not profit substantially. On the basis of this analysis of the data, the possibility is raised that delay in forced curriculum choice is not so much the answer as would be early identification of those with low RVP. Then, some intensive guidance could be given, at least as early as the sixth grade, in much the same way remedial reading is given to those who need it.

These data, based as they are on a small N (110), are not definitive, but rather are indicators of the need for changes and improvements in the educational-vocational guidance of the youngsters in the

early stages of their career development. It is encouraging that, as a group, they are becoming more ready to make educational and vocational decisions. It is disconcerting, however, to consider the large number of students who are not ready at the eighth grade, or even at the tenth grade, to make the educational decisions demanded at this critical time in the process of their career development. And youngsters who do not make the right choice are cut off from the right opportunity.

Summarizing, it was found that there was a significant change in ability to deal with the eight variables which were considered to be measures of Readiness for Vocational Planning. It was found that these youngsters increased in their awareness of interests and values and their relation to occupational decisions, were more willing to take responsibility for their decisions, and continued to increase in both awareness and accuracy of appraisal of abilities. Also, more factors were considered when making educational-vocational decisions.

It was noted, however, that, even as late as the tenth grade, many youngsters were behaving in a manner that would indicate they had made decisions and would make future decisions based on information irrelevant and often inaccurate. There were, however, a good many students in the eighth grade who were more advanced; more ready to make vocational decisions than were some tenth-grade students. For some students, at least, it would seem not to be necessary to delay curriculum choices as has been advocated by many vocational psychologists.

Persistence

Theories and researches on vocational development are likely to involve a concept of vocational maturity, here called Readiness for Vocational Planning (RVP), and some procedure for measuring behavioral tendencies of youth which are believed to be indicators of the construct. In theories of vocational development RVP usually will be an important hypothetical mediating variable, while in associated researches measures of RVP usually will be expected to perform as significant predictors of vocational choices and other aspects of the development process called "career." The Career Pattern Study has already researched a large number of possible indicators of Vocational Maturity, and on the basis of correlational and factor analyses has demonstrated the multi-dimensional nature of the behavioral domain involved (Super and Overstreet, 1960).

Vocational development theory encourages seemingly contradictory expectations regarding the constancy of RVP measurements over time. On the one hand, traits involved in the domain of Readiness for Vocational Planning should represent relatively enduring characteristics of the behaviors of the subjects just to qualify as personality traits. Thus, there should be enough stability over time so that the multivariate distribution of individual differences found in 1961 is recognizably similar to that found in 1958. On the other hand, if vocational development is a developmental process which includes in its span the early years of adolescence, then there should be significant changes in the patterns of responses to interview questions which are RVP trait indicators over a two-and-a-half year interval beginning early in the eighth

grade. Thus, there should be a demonstration of change as well as a demonstration of stability. It might be expected from theory that the centroid of the sample (the vector of RVP variable means) would shift over time in directions which could be construed as indicating increased readiness, while the dispersion (the matrix of RVP variances and covariances) would not change radically over time, indicating the desired stability of trait patterns of individuals within the sample. In other words, individual profile shapes should be relatively stable, but there should be a general shift toward greater maturity. Since the 1958 and 1961 data derived from the same sample of subjects and not from independent samples, the multivariate analysis of variance was not an appropriate design in this case. Canonical correlation was chosen as a method of analyzing the stability of the dispersion over time, and correlated-samples t-tests were employed in the analysis of changes in the means.

One-third of the cross-correlations between 1958 and 1961 RVP scale scores reached the .05 level of significance ($r \geq .20$ in 22 out of 64 instances), but in no case was the correlation large, the largest being .36 between 1958 and 1961 Factors in Curriculum Choice scores (Table 4.3). All but one of the significant coefficients were positive, the exception being a correlation of -.28 between 1958 Interests and 1961 Accuracy of Self Appraisal scores. The smallness of these coefficients is partly due to the unknown but presumably considerable unreliabilities of the scales. As is well known, empirical studies of the reliability of scores obtained from ratings of interview protocol material, involving human judges, are very costly. In the present research, an extensive effort was made to

TABLE 4.3

Cross-correlations Between
1958 and 1961 RVP Variables: p = .05

1958 RVP Variables		I	II	III	IV	V	VI	VII	VIII
I	Factors in Curriculum Choice	.36	.22	...	...	.27	...	.27	.26
II	Factors in Occupational Choice	.22	.29	...	...	...	...	.28	...
III	Verbalized Strengths, Weaknesses	.26	.26	.22	...	.32	...	.28	...
IV	Accuracy of Self Appraisal	...	...	...	...	...	...	...	.21
V	Evidence for Self Ratings	...	...	...	...	...	...	...	...
VI	Interests	...	...	...	-.28	...	.25	.32	...
VII	Values	...	...	...	...	.32	...	.23	...
VIII	Independence of Choice	...	...	...	.20	.24	...	...	.29

standardize the scoring procedure and some reliability study was done providing indications of "adequate" reliabilities. It was decided to invest the modest support available in researching the construct and predictive validities of the instrument, with the thought that if sufficient evidence accumulated that some important dimensions of Readiness for Vocational Planning were scaled, a later effort to improve the standardization of the instrument and to make it available to other researchers might be warranted.

Canonical correlation analysis is a powerful tool capable of revealing the full extent of the interrelatedness of two sets of scores such as provided by the 1958 and 1961 data (Cooley and Lohnes, 1962). The first canonical correlation indicates the maximum correlation which can be obtained between optimally weighted linear functions of the two sets of scores. The second canonical correlation indicates the maximum correlation which can be obtained between another pair of optimal linear functions of the two sets of scores, subject to the restriction that the second pair of linear functions must be orthogonal to (uncorrelated with) the first pair. Thus, the second canonical correlation is based on overlapping information in the two sets of scores which was not used in the first canonical correlation. There is the possibility of fitting additional pairs of linear functions which will be orthogonal to all previous pairs and will be significantly correlated, but in the present case only two significant canonical correlations developed. Thus, the canonical correlation analysis produces an index to the amount of common variance shared by two sets of measurements (as the sum of the squared canonical correlation coefficients) and an indication of the number of orthogonal,

or independent, dimensions of shared information (as the number of significant canonical correlation coefficients). The method is a great boon to researchers studying relationships among sets of measurements when systematically low correlations between pairs of measures, one from each set, may mask the true extent of informational overlap, or common variance, present, as in this case. The reader who is meeting canonical correlation analysis for the first time may be assured there is no magic here. The method is rigorously derived by means of differential calculus to locate weights for linear functions of each set of measurements such that the correlation of the linear functions will be maximum, but the size of this maximum is strictly determined by the relationships existing in the data. The method reveals relationship and does not create it.

The first canonical correlation between the 1958 and 1961 RVP scale scores was .59 ($p < .001$), and the second was .48 ($p < .001$). (See Table 4.4) These coefficients indicate that a total overlap in variances of 57% has been established between the two sets of scores, and seem to reflect a moderate but significant amount of stability in the RVP trait measurements. The largest contributor to the linear combinations for the first canonical correlation was Factors in Curriculum Choice, and the largest contributor to the combinations for the second canonical was Accuracy of Self Appraisal. Interestingly; Factors in Occupational Choice was the one variable that did not make a useful contribution to any of the linear combinations. Might this support the hypothesis that in the eighth grade the responses to these questions were based on a different process than in the tenth grade, perhaps fantasy in the former and realism in the latter?

TABLE 4.4

Weights for Canonical Correlation Functions
1958 vs. 1961 RVP

	RVP Variables	First Function R_c = .59		Second Functions R_c = .48	
		1958	1961	1958	1961
I	Factors in Curriculum Choice	.54	.51	.04	.04
II	Factors in Occupational Choice	.03	.04	.15	.03
III	Verbalized Strengths and Weaknesses	.33	-.13	.32	.28
IV	Accuracy of Self Appraisal	.27	-.27	.45	.78
V	Evidence for Self Ratings	-.14	.46	-.16	.29
VI	Interests	.46	.22	-.82	-.24
VII	Values	.20	.50	-.01	-.38
VIII	Independence of Choice	.23	.37	.54	.13

Multidimensionality

Table 4.5 reveals that although there were quite a few statistically significant correlations among the eight RVP variables based on the 1958 interview data, the coefficients were uniformly low. In no case was there as much as a 25% informational overlap between two of the variables. However, it is apparent that four of the variables clustered, each having significant correlations with four or more other variables (Factors in Curriculum Choice, Factors in Occupational Choice, Verbalized Strengths and Weaknesses, Values), and the other four did not cluster (Accuracy of Self Rating, Interests, Independence of Choice and Evidence for Self Rating). A principal components analysis of the inter-correlations (with 1.0 in each diagonal element) produced three eigen-values larger than 1.0, of which the largest was 2.8 (accounting for 36% of the trace of the correlation matrix, and thus 36% of the total test-space variance). The corresponding three components could absorb 62% of the total variance in the eight-dimensional RVP space. All eight scales loaded positively on the first component, with the four scales which were observed to cluster having the highest loadings. The bipolar second component was dominated by a high positive loading on Accuracy of Self Appraisal, not a clustering variable. The third component was dominated by a high negative loading on Evidence for Self Rating and a moderate positive loading on Interests, both non-clustering scales. Thus while there was an interesting cluster of four variables, it appeared that all eight variables contributed to the establishment of the RVP measurement space.

TABLE 4.5

Intercorrelations Among RVP Variables: $p < .01$
1958 Correlations Above 1961 Correlations in Each Row

	RVP Variables	II	III	IV	V	VI	VII	VIII
I	Factors in	.47	.41	...	.36	...	.45	.34
	Curriculum Choice	.26	.28	...	...	...	...	.35
II	Factors in		.49	...	...	.38	.30	.30
	Occupational Choice		.33	...	.26	.33	.41	...
III	Verbalized Strengths			...	...	.33	.39	...
	and Weaknesses			...	...	.26	.32	...
IV	Accuracy of				...	...	...	...
	Self Appraisal			...	...	...	...	.26
V	Evidence for				...	.30	...	
	Self Ratings				...	.33	...	
VI	Interests					...	...	
						...	...	
VII	Values						.25	
							...	
VIII	Independence of							
	Choice							

The correlations were lower in 1961 than they were in 1958, and there were fewer which were statistically significant (Table 4.3). The three variables which did not cluster were repeaters in this respect (Accuracy of Self Appraisal, Evidence for Self Rating, Independence of Choice). A principal components analysis of the intercorrelations produced two eigenvalues larger than 1.0, of which the first was 2.4 (accounting for 30% of the trace). The two components absorbed 47% of the total variance in the RVP space. On the first component the three non-clustering scales had the low loadings, but on the second component they had the high loadings. Again, the non-clustering scales had an important role in defining the Readiness for Vocational Planning space.

Thus the eight RVP scales exhibited enough mutual independence to guarantee the multidimensionality of the measurement space. But, do they represent a reasonable strategy for combining items from the 43-item interview? The evidence on this issue is inconclusive. A principal components analysis of the intercorrelations of the 41 items as responded to in 1958 indicated that the eight largest components could account for 45% of the total variance in the 41-dimensional space (factored with ones in the major diagonal of the correlation matrix), with the first eigenvalue emerging as 4.7 and the eighth eigenvalue as 1.6. All the eigenvalues greater than one, of which there were 17, accounted for 71% of the total variance. See Appendix F for these results in detail. The multidimensionality of the response set was clearly established.

At this point a decision was made to score the interview into a set of eight variables defined by *a priori* logical considerations, rather than to rotate the principal components to a suitable structure. This

decision is parallel to that made by the Career Pattern Study staff (Super and Overstreet, 1960), and is defended in terms of the meaningfulness of the *a priori* variables in the context of the current literature on vocational development. Considerable empirical evidence in favor of the decision is developed in the predictive validity studies reported in Chapters 5, 6, and 7.

Summarizing, the analyses of internal correlations within the 1958 and the 1961 Readiness for Vocational Planning scales scores established the multivariate nature of the behavioral domain, in that the principal components for the 41 questions in the RVP interview schedule provided a possible 17 independent dimensions in terms of which the items could have been combined, and the principal components of the arbitrarily (albeit logically) determined 8 RVP scales demonstrated very small variances for a general component of RVP. There is no question regarding the multi-dimensionality of the RVP measurement space established by the instrument. Many readers will question the choice of the particular 8 scales employed. The authors hasten to insert their own uncertainty about the wisdom of the choice, and to describe it as a provisional one. If further evidence of predictive validities accumulates (see Chapters 5, 6, and 7 for a start), they intend to invest in an effort to improve the instrument and its scaling with the thought that an improved version of a Readiness for Vocational Planning interview (or possibly even a group-administered paper-and-pencil form) might be useful in counseling research and practice. In such an event a full-scale factor analysis, with rotation of axes in search of a structure, of the items is planned, and a different set of scales might be put forward. On the other hand,

it is hoped that the reader will grant the logical attractiveness of the present set of scales. Until psychologists are willing to turn to strictly analytic solutions of the dimensional bases of our measurement spaces, subjective decisions derived from theoretical considerations interacting with statistical considerations will determine the choice of ways of combining items into scales.

The RVP score sets collected in 1958 and in 1961 overlapped with 57% shared variance, which to the authors seemed to warrant the hypothesis of a common behavioral domain, or common traits, measured twice over a long time interval, and the mean differences between the two sets seemed to warrant the hypothesis of a developmental process modifying the behavior traits over the interval. The differences were in directions assumed to indicate increased readiness for planning or vocational maturity.

Follow-up studies of these subjects will cast further light on the meaning and uses of the RVP measure. The present findings, especially as they are supportive of the similar findings of the Career Pattern Study (Super and Overstreet, 1960), may suggest that it would be valuable for school guidance counselors to collect RVP-type data in their contacts with adolescent clients, and to explore for themselves the relationships of such data to clients' problems and problem-solving processes.

CHAPTER FIVE

Concurrent Validities and Correlates of RVP

The previous chapter reported some evidence for the construct and factorial validities of the Readiness for Vocational Planning scales. Operational realizations in research procedures of scientific concepts must exhibit such validities, but the real payoff in scientific research lies in the establishment of predictive validities for measures of dynamic concepts. In personality theory and social psychology, which provide the locus of the present research effort, dynamic concepts are frequently postulated as personality traits and syndromes of traits. RVP represents a syndrome of traits which career psychology postulates to have dynamic, motivational value, capable of "causing" or directing vocational behaviors of people. It is of utmost importance that research demonstrate that measures of vocational maturity traits, such as RVP, possess predictive validity for classes of vocational planning and adjustment behaviors. This chapter and the next two are concerned with reporting predictive validities which have been found for the 8th and 10th RVP score sets in this sample.

When the criterion variable in a prediction study was collected at about the same time as the predictor information, it is customary to speak of the concurrent validity of the predictors. The first part of this chapter reports on the concurrent validities of the 8th and 10th RVP score sets when the criterion is high school curriculum planned (for 8th RVP) or curriculum enrollment (10th RVP). It should not be necessary to argue in detail that curriculum choice in high school is a most significant career development criterion in today's world.

The second part of this chapter reports on some important correlates of RVP, knowledge of which is required to establish what RVP is not measuring. These factors include sex, I.Q., and family socio-economic level. It would have been extremely embarrassing if RVP had turned out highly correlated with any one of these alternative explanations of, or "causes" of, vocational planning and adjustment criteria. Fortunately, such was not the case.

Concurrent Validity for Curriculum Choice

The Readiness for Vocational Planning interview schedule bears a large burden in the design of the longitudinal study. It must yield substantial and important information about the status of development of the subjects in the early stages of the study to justify following them through high school and out into life. When, as in this case, responses to an interview schedule have been coded quantitatively to produce a number of scales, the problem of whether useful questions have been posed is joined by the problem of whether useful dimensions, i.e., reliable and valid ones, have been established in the coding and collating of the responses. A demonstration of predictive validity of the interview scales relative to a criterion of importance in the educational and vocational development of the subjects would have value in two ways: first, it would be a significant research finding, and second, it would contribute to confidence in the interview scales. The hypothesis of this study is that the interview scales have predictive validity for the criterion of choice of high school curriculum.

The criterion grouping of the 110 subjects resulted from their choices of high school curricula in the tenth grade. The three groups were College Preparatory with 61 subjects, Business with 31, and Industrial Arts and General with 18. Two multiple group discriminant analyses were computed; one employed the eight scores on the Readiness for Vocational Planning (RVP) variables collected in the eighth grade, before the choices were made by the subjects, the other employed the RVP variables scores collected in the tenth grade when the subjects had been in their chosen curricula for almost two academic years. It was expected that both analyses would lead to rejections of the null hypothesis that the three groups might represent random samples from a common multivariate population. That is, both the eighth grade and the tenth grade score sets were expected to provide bases for discrimination of the three curriculum groups. Since the subjects were two and a half years older and had already made the choices in the tenth grade, it was also hypothesized that the tenth grade RVP scores would provide substantially better discrimination of the curriculum choices then did the eighth grade RVP scores. Thus, it was hypothesized that the F-ratio for the null hypothesis would be substantially larger in the analysis of the tenth grade RVP scores than in the analysis of the eighth grade scores. It was also anticipated that 1) the discriminant functions would indicate which of the eight RVP variables contributed heavily to the prediction of the criterion in each analysis, and 2) the most important contributors might vary between the two analyses.

In this type of experiment rejection of the null hypothesis is not very satisfying or informative. After a statistically significant

discrimination is found, it is still of practical importance to know how good the separation of the groups is by the variables. One way to test this separation is to assign subjects to groups on the basis of their score profiles and the definitions of the group swarms afforded by the centroids and dispersions of the groups in the multivariate space in order to see how many correct classifications (hits) and incorrect ones (misses) occur. A table of such hits and misses provides for the statistical model a sort of batting average, which can tell a revealing story. To produce such tables, multivariate classification probabilities were computed on the basis of each of the two score sets according to the method described in W. W. Cooley and P. R. Lohnes (1962). Again, it was expected that the tenth grade RVP scores would produce a substantially better incidence of correct classification than the eighth grade scores.

The multivariate analyses of variance yielded an F-ratio of 2.23 for the eighth grade RVP scores versus curriculum group, and an F-ratio of 2.34 for the tenth grade RVP scores versus the same curriculum. Both ratios had 16 and 214 degrees of freedom, and both indicated a probability of less than .01 for the null hypothesis. Thus, both sets of Readiness for Vocational Planning scores were shown to have predictive validity for the curriculum choice criterion, although unexpectedly the tenth grade F-ratio was not substantially larger than that for the eighth grade data. It is interesting to note that the Wilks Lambda for the eighth grade data was .735 and for the tenth grade data was .725, illustrating the close similarity of the outcomes.

Table 5.1 displays the discriminant function weights, scaled by a function of the variance of each score to show the relative contri-

TABLE 5.1

Scaled Discriminant Function Weights for Curriculum Prediction

RVP Variable	Eighth Grade Data		Tenth Grade Data	
	8thDF1	8thDF2	10thDF1	10thDF2
Factors in Curriculum Choice	.12	-.17	.62	.10
Factors in Occupational Choice	-.12	.17	-.41	.60
Verbalized Strengths and Weaknesses	.12	-.25	-.28	-.07
Accuracy of Self Appraisals	.53	+1.00	-.62	.70
Evidence for Self Ratings	+1.00	-.44	+1.00	+1.00
Interests	.37	-.14	.38	.20
Values	.20	.61	.00	.30
Independence of Choice	-.04	-.14	.14	.00

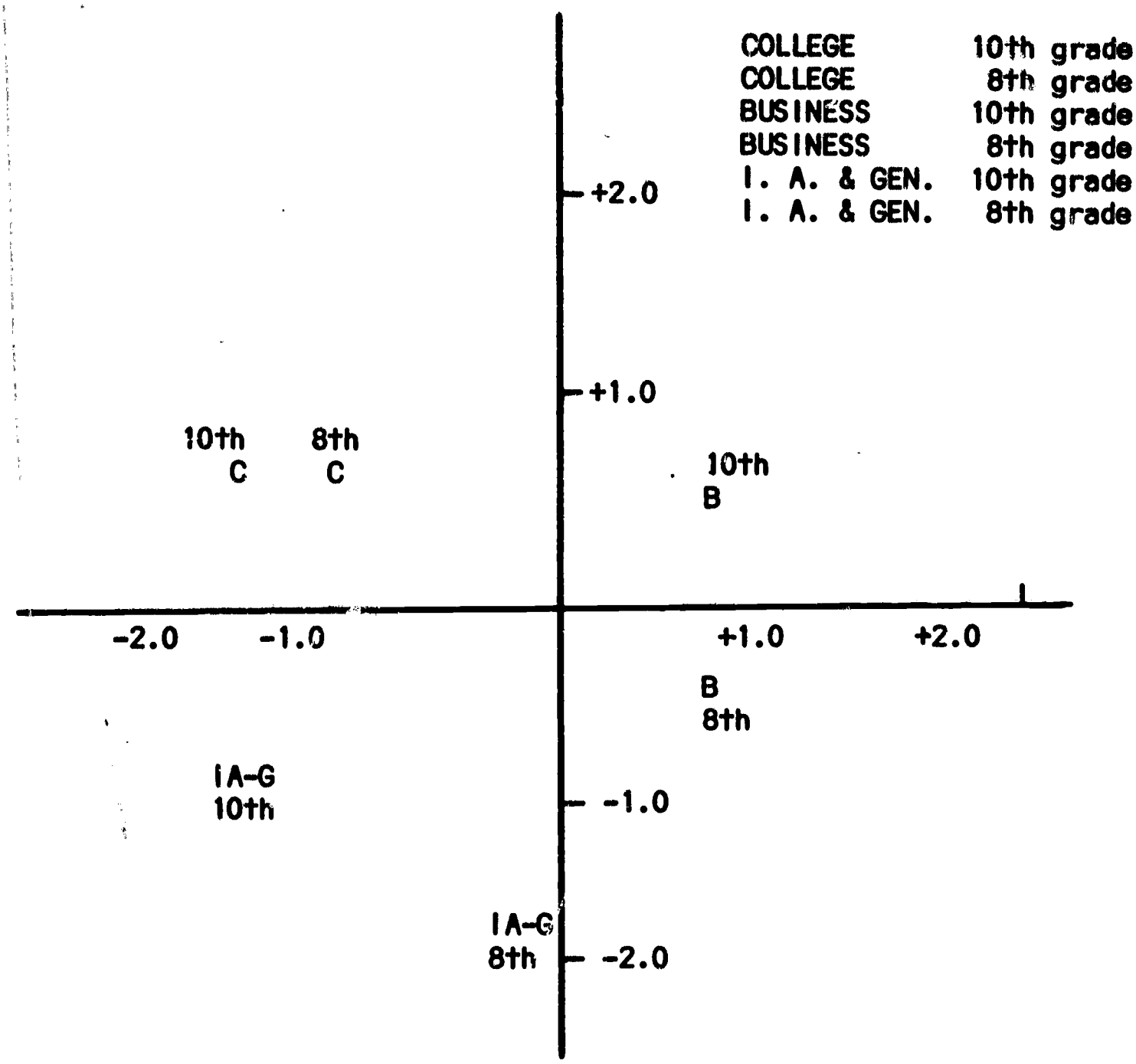
butions of the variable to the discrimination obtained by the function. In the eighth grade experiment, the first discriminant function (hereafter 8thDF1) accounted for 81% of the discriminating power of the battery, and the second function (hereafter 8thDF2) accounted for 19% of the discriminating power. In the tenth grade RVP space, the first function (hereafter 10thDF1) accounted for 76% of the discriminating power, and

the second function (10thDF2) for 24%. Thus, in each experiment the first discriminant function has far greater importance than the second. It is noteworthy that the best predictor variable in each experiment is Evidence for Self-Rating; the second best in each case is Accuracy of Self-Appraisal; and the third best in the eighth grade RVP space is Interest, while the third best in the tenth grade RVP space is Factors in Curriculum Choice. Here is evidence of some stability in the operation of the interview variables at a two and a half year interval.

Figure 5.1 shows the locations of the group centroids in the two-dimensional discriminant space for both experiments. The availability of this revealing figure is one of the important contributions of the discriminant analyses, for it is impossible to map the locations of the group centroids in the original eight-dimensional RVP space. The figure shows that both discriminant analyses produce approximately the same mapping of the groups, with the exception of the Industrial Arts and General group, which is more isolated in the eighth grade data than it is in the tenth grade data.

FIGURE 5.1

Centroids in Discriminant Space* Based on
Scores on Eight Variables in 10th Grade Vs 10th Grade Curriculum
Scores on Eight Variables in 8th Grade Vs 8th Grade Curriculum



*Standard Deviations Along the Discriminant Axes

	1958		1961	
GROUP	FUNCTION I	FUNCTION II	FUNCTION I	FUNCTION II
COLLEGE	.82	-.02	.77	.28
BUSINESS	-.95	.45	-1.42	.43
I. A. & GEN.	-1.15	-.69	-.18	-1.71

Table 5.2 reports the results of the multivariate classifications probabilities study. Each subject was assigned to the group for which he had the highest computed probability of membership. If that was his actual group, he was recorded as a hit; but if he actually belonged to another group, he became a miss. The table reveals a 7:4 hits:misses ratio in each experiment. Again it is seen that, contrary to hypothesis, the tenth grade RVP scores did not provide superior information for the prediction of curriculum choices to that provided by the eighth grade RVP scores.

TABLE 5.2

Classification from Membership Probabilities

(Eighth grade data hits and misses outside brackets; tenth grade hits and misses within brackets.)

	Actual Group Entered			
Assigned Group	College	Business	I. A. & Gen.	Total
College	51 (55)	14 (18)	12 (14)	77 (87)
Business	10 (5)	17 (13)	4 (3)	31 (21)
I. A. & Gen.	0 (1)	0 (0)	2 (1)	2 (2)
Total	61 (61)	31 (31)	18 (18)	

From eighth grade data: 70 hits, 40 misses.

From tenth grade data: 69 hits, 41 misses.

The strength of the information clearly lies in its capacity to identify potential or actual College Preparatory students. Only 10 of the 61 potential College Preparatory students in 1958 (eighth grade data) were misclassified, and only 6 of the actual College Preparatory students in 1961 (tenth grade data) were misses. The weakness of the information lies in its poor ability to classify the Business students, and in its total inability to classify Industrial Arts and General students. This weakness derives from a tendency of about half the Business students and most of the Industrial Arts and General students to describe themselves in the interviews in much the same terms employed by the College group. Unfortunately, this tendency is stronger in 1961, after curriculum choices, than it was in 1958 (26 misclassified as College on the basis of the 1958 data, and 32 so misclassified from the 1961 data).

The predictive validity of the RVP variables against curriculum choice as a criterion has been established.

RVP variable scores collected early in the eighth grade appear to have as much predictive validity for curriculum choice as do scores on the same variables collected two and one half years later, when the subjects are that much more mature and have already selected their curricula. This would seem to be evidence that the Readiness for Vocational Planning traits are well-defined and may be reliably estimated in the first semester of the eighth grade.

The discriminant analyses indicate that two of the eight RVP variables, Evidence for Self-Ratings and Accuracy of Self-Appraisal, con-

tribute most heavily to the discriminating power of the RVP battery. This should point out to school personnel the urgent need for early assistance to youngsters in developing accurate perceptions of their abilities.

The classification studies indicate that the College Preparatory students possess excellent Readiness for Vocational Planning, in that their actual behavior (curriculum choice) corresponds almost perfectly with their RVP verbal behavior.

As reported in the next section, RVP performance is somewhat contaminated with verbal ability (about 32% of 8th grade RVP variance and about 5% of 10th grade RVP variance), and the best predictor, Evidence for Self-Ratings, is the most contaminated of the RVP variables. This contamination helps to explain the greater predictability of the College Preparatory group membership, but it is not unexpected, excessive, or even unwanted. RVP scales totally uncorrelated with verbal ability would be difficult to understand, since any judgments of the degree of maturity of verbal performances should be somewhat correlated with the verbal abilities of the performers. This study was planned to explore the relationship of a set of scales purporting to measure aspects of Readiness for Vocational Planning, and known to be only modestly contaminated with verbal ability, to the exterior record of a concrete vocational act, the selection of a high school curriculum. Fortunately the RVP scales do not need to be as efficient predictors of curriculum choice as is verbal ability to justify themselves as measures of verbal correlates of vocational acts.

It is interesting to note that the average I.Q. of the subjects misclassified as College Preparatory on the basis of tenth grade data is 105, suggesting that many of them could do College Preparatory work. However, the average socio-economic status of these subjects was 4+ (Hamburger, 1957), indicating lower-middle to lower socio-economic status, and suggesting a possible failure of the school and home to encourage these youngsters to make sufficiently ambitious curriculum choices.

Finally, the RVP variables have performed well enough in this study to warrant some optimism regarding their future performance as predictors in the ten year longitudinal study.

Thus, the multi-dimensional personal interview administered to 110 boys and girls in the eighth and the tenth grades has demonstrated, under statistical analysis, its ability to separate these boys and girls into three curricula groupings: College Preparatory, Business, and General-Industrial Arts; and to predict with some validity as early as the eighth grade the curriculum in which a youngster will be in high school. Although there is a good deal of similarity among the groups, the College Preparatory group consistently demonstrated the highest Readiness for Vocational Planning as measured by this instrument.

The discriminant analyses, which show the relative magnitude of the contributions of the variables measuring RVP, indicate that the ability to estimate accurately one's scholastic abilities and to cite the rationale for these estimates appear to distinguish those students in the College Preparatory and to indicate higher RVP as measured by this instrument. This should point out to school personnel the urgent need for early assistance to youngsters in developing accurate perceptions of their

abilities, because youngsters are being forced to make pre-vocational choices as early as the eighth grade and it can be assumed that those who are most ready and able to make choices will make the wisest decisions.

I.Q., Sex, and Family Socio-Economic Level

Investigators employing structured interviews always have the fear that they are measuring verbal intelligence primarily. Fortunately this did not appear to be the case with the RVP scales. Only one of the 1958 score distributions displayed more than 10% common variance with the Otis I.Q. distribution (Evidence for Self Rating correlated .50 with Otis I.Q.) and none of the 1961 scores overlapped as much as 4% with Otis I.Q. The multiple correlation of Otis I.Q. with the eight RVP scales in 1958 was .57 ($p < .001$), but was determined primarily by the correlation with Evidence. The multiple correlation of Otis I.Q. with the eight RVP scales in 1961 was only .23 ($p > .05$). It seemed to make sense that when the subjects were younger their responses to the RVP items should have been more influenced by their verbal abilities than they were two-and-a-half years later, but even in 1958 this influence was not excessive.

A major difference between this longitudinal study and the Career Pattern Study (Super and Overstreet, 1960) is the inclusion of both sexes in the present sample. Developmental theory and educational practice contradict each other on this issue, since theory stresses sex differences and practice usually ignores them. In vocations sex differences are usually but not always strictly observed. The senior author recognized the risk involved in planning a two-sexes sample. Two multivariate analyses of variance were conducted to test the significance of

the differences in centroids and dispersions between the sex groups in the RVP space in 1958 and in 1961. For the 1958 scores, Wilks' $\Lambda = .88$, $F_{8, 107} = 1.7$, $p \sim .10$, and for the 1961 scores $\Lambda = .87$, $F_{8, 107} = 2.0$, $.10 > p > .05$. These are ideal findings, because any personality inventory ought to tend to discriminate the sexes, as the RVP scales do, but it was not desirable to achieve significant discrimination which would force separate treatments of the sexes in all the other analyses, because of the sample size. Since the tendency to discriminate the sexes has not been found to be statistically significant, separate treatments are not necessary in this case. Presumably when similar research is done with much larger samples, the sexes will be treated separately. Chapter Eight inquires into sex differences in actual career patterns.

It has been theorized that vocational development "is determined by the individual's parental socio-economic level," in part, (Super, *et al.*, 1957, p. 14). However, in these data the eight 1961 RVP scale scores were essentially uncorrelated with socio-economic level, the multiple correlation being only .14 ($p < .05$).

Thus, the 1961 responses were less homogeneous than those of 1958, and less dependent on verbal ability, which would seem to indicate that the responses were more discriminative at the more mature age. Sex differences in RVP did not dictate a separation of the sexes in the various analyses, although it was evident that with a much larger sample such separation would be required. RVP was not appreciably related to socio-economic level of family, but was related to socio-economic level of occupational choices.

CHAPTER SIX

Senior Year Predictive Validities of RVP

The notion of vocational maturity, as a composite evaluation of aspects of the expressed self concept and other behavioral indicators of adolescent subjects, has been firmly lodged in the literature of career psychology, primarily due to the work of Super and his colleagues. All attempts to scale vocational maturity have resulted in multidimensional solutions (Super and Overstreet, 1960; Gribbons and Lohnes, 1964a; Crites, undated). Very little has been done to establish the validities of vocational maturity measures as predictors of career development criteria, although all three sources of the scaling efforts are independently pursuing longitudinal studies. The earlier chapters of this monograph established the reasonableness of an eight-scale scoring of a vocational planning interview for junior high school and early high school students. Chapter Four demonstrated that student response changes on the eight Readiness for Vocational Planning scales (hereafter called RVP scales) from the eighth to the tenth grade are consistent with an interpretation of generally improved vocational maturity. Chapter Five established that both the eighth and tenth grade RVP score sets have substantial predictive validity when the criterion is choice of high school curriculum. Perhaps the most dramatic empirical finding to date is the finding that the eighth grade RVP scores predicted future curriculum choice as well as did the tenth grade RVP scores, which were predicting choices already made. In the sample, many subjects appeared as ready and prepared to plan a high school program in the eighth grade as in the tenth grade.

Super (1957) and Tiedeman and O'Hara (1963) are prominent among the authorities who have implied that, since vocational maturity is an emerging development of adolescence, little of it can be expected of youth in junior high school. Crites (undated) has pointed out the almost total lack of empirical evidence testing this theoretical formulation. In this chapter, the authors report on an extended series of prediction studies from their longitudinal research on RVP and its correlates, which track the 110 boys and girls through five years of their histories which have unfolded since they were first interviewed at the start of the eighth grade, in 1958. It is now possible to demonstrate a number of criteria which are predictable from RVP scores, as well as some important failures of predictability. A very interesting comparison of the predictive values of early eighth grade and late tenth grade RVP score sets is now available. The chapter organizes the criteria studied under the topics of occupational goals criteria, educational goals criteria, and family-related criteria. The abbreviations "8th RVP" for Readiness for Vocational Planning scales collected at the start of the eighth grade in 1958, and "10th RVP" for RVP scales collected at the end of the tenth grade in 1961, and the adjective "1963" to describe data collected in the third interview at the end of the senior year in high school will be standardized hereafter. "Manova" is employed for "multivariate analysis of variance."

1. Occupational Goals Criteria

The 110 boys and girls in the sample have expressed interest in a great variety of occupations during the three interviews over the

five year period. It has been necessary to abstract a few attributes of occupational choice from this melange of occupational titles. These attributes provide classifications in a few categories of the many titles, and afford appropriate criteria for what Super has called "congruent predictive validity" studies, since they involve "instruments which are relevant to a theory" (the RVP scales) and "criteria specified by the theory" (Super, 1963, p. 22). The attributes employed are socio-economic level of occupational preference (Hamburger's 7-point scale), Roe occupational group (Anne Roe's 8 categories), and Roe occupational level (Anne Roe's 6 levels). A second set of attributes is provided by change scores for these basic attributes over the five year period.

The manova for the 8th RVP versus the 1958 socio-economic level of occupational preferences resulted in a finding of high predictability for this criterion. There were three groups on the criterion variable. Group one consisted of 30 subjects who chose occupations at level 1 (the highest socio-economic level), group two consisted of 34 subjects who chose occupations at levels 2 and 3, and group three consisted of 46 subjects who chose occupations at levels 4 and 5. It is interesting that none of the 110 students in the eighth grade were interested in occupations at the lowest levels available, 6 and 7, which contain the semi-skilled and unskilled job titles. The aspirations of these youth at the beginning of the eighth grade were high. Of course, it is not surprising that the socio-economic levels of the occupational interests expressed in 1958 are predictable from the RVP interview scales from that year, as this is a concurrent validity finding.

TABLE 6.1

Readiness for Vocational Planning (RVP) Scale Titles

Scale	Title
I	Factors Considered in Curriculum Choice
II	Factors Considered in Occupational Choice
III	Verbalized Strengths and Weaknesses
IV	Accuracy of Self Appraisal
V	Evidence for Self Ratings
VI	Interests
VII	Values
VIII	Independence of Choice

TABLE 6.2

Multivariate Analysis of Variance Results for 8th and 10th Grade RVP Scales Versus Occupational Goals Criteria

Criterion	Predictors	Λ	F	df1	df2	p	Significant RVP Scales
Socio-economic level of occupational preferences in 8th grade (1958)	8th RVP	.727	2.16	16	200	<.01	I, IV, V, VI
	10th RVP	.829	1.23	16	200	~.25	
Socio-economic level of occupational preferences in 10th grade (1961)	8th RVP	.569	1.88	32	363	<.01	I, III, IV, VI
	10th RVP	.483	2.48	32	363	<.01	I, IV, V
Socio-economic level of occupational preferences in 12th grade (1963)	8th RVP	.613	1.62	32	363	<.05	I, III, V, VI
	10th RVP	.546	2.02	32	363	<.01	I, V, VI
Roe level of occupational preferences in 8th grade	8th RVP	.826	2.66	8	101	<.01	I, II, V, VI, VII
Roe level of occupational preferences in 10th grade	8th RVP	.725	2.18	16	200	<.01	I, III, IV, VI
Roe level of occupational preferences in 12th grade (1963)	8th RVP	.644	3.08	16	200	<.01	I thru VII
	10th RVP	.716	2.27	16	200	<.01	I
Roe occupational preference group in 8th grade	8th RVP	.610	2.23	24	287	<.01	

The manova for the 8th RVP versus the 1961 socio-economic level of occupational preferences also resulted in a finding of high predictability. This analysis was based on five groups on the criterion variable, with 14 subjects in the level 1 group, 36 subjects in the level 2 group, 24 subjects in the level 3 group, 25 subjects at level 4, and 11 subjects at level 5. Once again, late in the tenth grade none of the students were interested in occupations in the lowest two levels. Presumably some of these youth had information available to them which indicated the unreality of their high aspirations, but they were not acting on it when they were interviewed. There is the problem of whether a youngster in this age group is able to admit to a very low occupational aspiration or interest, even if it is realistic for him.

When the criterion was 1963 socio-economic level of occupational preferences, the manova for the 8th RVP predictors indicated moderate predictability. Again there were five groups, with 14 subjects at level 1, 29 at level 2, 24 at level 3, 25 at level 4, and 18 at level 5. Even at the end of senior year there were no students talking about occupations at levels 6 and 7.

The predictability of these same criteria from the 10th RVP scores provides an interesting contrast. The 10th RVP cannot provide backward predictability of the 1958 socio-economic level of occupational preferences, but of course can provide highly significant concurrent prediction of the 1961 grouping. The predictability of the 1963 socio-economic level of occupational preference was high, where the predictability from the 8th RVP was only moderate, which makes sense in terms of the closer temporal proximity of the 10th RVP to the criterion. In

summary, socio-economic level of occupational preferences across the five years had good predictability from the 1958 and the 1961 RVP scales. RVP variables I - Factors in Curriculum Choice, IV - Self Estimate of Abilities, V - Rationale for Abilities Estimate, and VI - Interests appeared repeatedly as the significant predictors. Strangely, RVP II - Factors in Occupational Choice did not contribute significantly to any of the interdependencies established. Possibly this has something to do with the seeming failure of reality testing reflected in the high aspirations of some of the students.

Anne Roe's well known classification of occupations into six levels differs importantly from the socio-economic level criterion considered above because it takes into account many aspects of the occupation and its prerequisites, being "a composite of responsibility, skill, intelligence, education, and prestige" (Super, 1957, p. 46). The Roe levels are

1. Professional and managerial (higher)
2. Professional and managerial (regular)
3. Semi-professional and low managerial
4. Skilled support and maintenance
5. Semi-skilled support and maintenance
6. Unskilled support and maintenance.

The 1958 Roe level of occupational preferences appeared to be highly dependent on the 8th RVP. However, the Roe levels were assembled into two groups, the first of which consisted of 65 subjects, 7 of whom were at level 1 and 58 who were at level 2, while the second group contained 43 subjects, 16 at level 3, 27 at level 4, and 2 at level 5. The failure to use levels 5 and 6 is striking. This is another not surprising concurrent validity finding.

The 1961 Roe level criterion also appeared highly dependent on the 8th RVP. The 1961 Roe levels were consolidated into three groups. Group one contained 55 subjects, of whom 4 had level 1 occupational preferences, and 51 were at level 2. Group two consisted of 27 subjects who were at level 3. Group three contained 28 subjects, with 26 at level 4 and 2 at level 5. The subjects are still shunning level 5 and 6 occupations, and there is still a very excessive aspiration to levels 1 and 2, although 10 subjects have lowered their aspirations from these heights since 1958.

Even the 1963 Roe level criterion appeared highly dependent on the 8th RVP. Again there were three groups. The first consisted of 49 subjects with level 2 preferences. The second contained 24 who were at level 3. The third group was composed of 32 subjects at level 4 and 5 subjects at level 5. The realism of these aspirations may be judged better if we point out that only 44 subjects stated the intention of spending four years in college in this senior year interview. When this same 1963 criterion was paired with the 10th RVP it was again highly predictable, although strangely the F ratio was smaller than for the 8th RVP. In summary, even with course grouping the Roe level criteria had good predictability from both the 1958 and the 1961 RVP. Only RVP VIII - Independence of Choice did not contribute significantly to any of the dependencies established. In three interviews over five years almost no students expressed interest in occupations at Roe level 5 and absolutely no students expressed interest in occupations at Roe level 6. There seemed to be a somewhat excessive designation of occupations at Roe level 2.

We have seen that both the socio-economic level and the Roe level of occupational preferences expressed at three points over the five year period were highly dependent on both the 1958 and the 1961 RVP scores. The surprising result was that the 8th RVP scores showed, in general, as much predictive validity against these criteria as did the 10th RVP scores, suggesting that the vocational maturity of these youth early in the eighth grade was comparable to that late in the tenth grade. When we turn to a different aspect of the occupational preferences, the Roe group criterion, we find no forward predictive validity for either of the RVP score sets, in that the manova probabilities are greater than .05 for the 8th RVP versus the 1961 Roe group scores, for the 8th RVP versus the 1963 Roe group scores, and for the 10th RVP versus the 1963 Roe group scores. There was a significant concurrent validity for the 8th RVP versus the 1958 Roe group scores. The authors deem this important failure of predictive validity for the RVP scales to be a result of some unknown compound of three causes. The first is the immaturity of the vocational choices classified into Roe groups. Only 34 out of the subjects maintained the same group classification for their occupational preferences over the five year period. The second is the very unfortunate conceptual confusion wrought on the criterion by the pooling of groups to build up the membership in the resulting sets of groups. The eight Roe groups provide a meaningful criterion, but it is questionable whether the sets of groups formed arbitrarily by the authors have much meaning. The third is, of course, a scarcity of information in the RVP scales relevant to this specific matter of the field placements of occupational preferences.

The distributions of the occupational preferences into the Roe groups in the three interviews is interesting. The heavily elected fields were Organization (27 elections in 1958, 29 in 1961, and 34 in 1963), Technology (25 in 1958, 26 in 1961, and 24 in 1963), Science (22 in 1958, 17 in 1961, but only 13 in 1963), and General Cultural, including prospective teachers (17 in 1958, 16 in 1961, and 18 in 1963). There was moderate election of the Arts and Entertainment field (13 in 1958, 9 in 1961, and 9 in 1963) and the Service field (4 in 1958, 11 in 1961, and 8 in 1963). There was almost no election in the Business Contact field (none in 1958 and 1961, but 3 in 1963) and the Outdoor field (2 in 1958, 2 in 1961, and 1 in 1963). The Massachusetts metropolitan areas origin of the sample helps to explain the curious lack of interest, even in the eighth grade, in outdoor occupations, but makes the avoidance of business contact occupations appear very strange. It should be remembered that half the subjects are girls, which makes the very moderate use of service and cultural, including teaching, groups rather surprising. The authors assume that when the ultimate occupational placements of the sample members are available, the subsequent personal histories of these young people will establish that for many of them both their occupational group and occupational level scores in junior and senior high school indicated aspirations which were not to be realized. Perhaps the actual level and group placements achieved will be somewhat predictable from the RVP scores, however.

Another aspect of the occupational preferences which was scored as a criterion was the consistency of Roe level and Roe group placement of preferences over the five year period (see Super and Overstreet,

1960, pp. 187-188). The authors expected that early vocational maturity for some of the subjects would be indicated by high consistency scores, and that the Readiness for Vocational Planning scales would be able to predict which young people would display such consistency. There were indeed 45 subjects whose expressed occupational preferences remained at the same level over all three interviews, and 41 who changed only once, and only one level that time. This is a remarkable consistency record for 78% of the subjects, testifying to the general stability of the occupational level criterion over the five year period, although the authors continue to doubt the ultimate realism of many of these stable performances. In the other 22% of the sample there were no really radical wanderers, and it may be that the relative homogeneity of this consistency criterion rendered it difficult to predict. Nevertheless it is disappointing that the RVP score sets failed to relate significantly to this criterion, and also to the criterion of consistency of Roe group placement. As previously noted, there were 34 youths whose preferences remained in the same field over the three interviews, and there were 60 whose field changed only once, reflecting high or moderate consistency for 85% of the sample.

In short, the 1958 and 1961 RVP scores are similarly valid predictors of socio-economic level and Roe level of occupational preferences, but lack validity as predictors of Roe group and consistency of level and group. These are important and disappointing failures of predictive validity for the final placements of the subjects in occupational groups and levels. For counseling psychology the most important criteria are discrepancies between consistently held goals of youth and their ultimate achievements under the press of society, and when such criteria

become available in this continuing longitudinal study, the RVP scales may be found to have useful degrees of predictive validity for them.

2. Educational Goals Criteria

The strong dependence of high school curriculum choice on both the 1958 RVP and the 1961 RVP has been reported elsewhere (Chapter Five). Certain other educational goals criteria have been collected and interrelated with the RVP score sets with similar success. In the 1958 and 1961 interviews the subjects were asked to describe their ultimate educational objectives. The responses were coded into four groups, providing a variable called "educational aspirations." The 1958 RVP scores were shown to have strong concurrent validity against this variable. The grouping on the criterion found 21 subjects planning to complete high school but pursue no further educational goals, 25 subjects planning to take junior college or vocational training courses after high school graduation, 51 planning to seek a B.A. or B.S. in a four year college, and 13 planning to attend graduate school after college.

Of greater interest is the similarly strong validity of the 8th RVP scores when the criterion is 1961 educational aspirations. In 1961 there were only 15 subjects planning for no education beyond high school, while 43 were planning for junior college or post high school vocational courses, another 43 were planning four year college programs, and 9 were planning to attend graduate school after college. The shift in frequencies from 1958 to 1961 suggests an increased valuing of post high school education coupled with increased realism about the obstacles standing between some of the subjects and four year college programs. Data on

TABLE 6.3

Multivariate Analysis of Variance Results for 8th and 10th RVP Scales Versus Educational Goals and Family - Related Criteria

Criterion	Predictors	Λ	F	df1	df2	p	Significant RVP Scales
Educational aspirations in 8th grade (1958)	8th RVP	.592	2.37	24	287	<.01	I, II, V, VII, VIII
Educational aspirations in 10th grade (1961)	8th RVP	.555	2.70	24	287	<.01	I, III, VI
Curriculum constancy, 8th thru 12th grades	8th RVP	.861	2.03	8	101	<.05	VI, VII
Extent of educational planning evidenced in the 12th grade (1963)	8th RVP	.832	2.55	8	101	<.05	
	10th RVP	.897	1.46	8	101	>.05	
Extent of occupational planning evidenced in the 12th grade (1963)	8th RVP	.856	2.13	8	101	<.05	
	10th RVP	.965	.45	8	101	>.05	
Socio-economic level of the family	8th RVP	.810	1.39	16	200	>.05	
Father's educational level	8th RVP	.805	1.43	16	200	>.05	
Accessibility of occupational preferences in 8th grade	8th RVP	.673	1.76	24	287	<.05	VIII

the senior year educational plans of the sample has yet to be processed, and will be reported along with the data on the first follow-up out of high school.

The number of changes in curriculum choices stated in the three interviews over the five year period provided a variable called "curriculum constancy." There were 71 subjects who made no change in curriculum planned and pursued, while 32 subjects made one change, and 7 subjects made two changes (the maximum possible changes in three interviews). Here is further evidence that the educational plans of the subjects were quite mature early in the eighth grade. Curriculum constancy was moderately dependent on the 8th RVP scores. There were only two groups, the second pooling the 39 changers. It is the authors' position that such educational criteria as these provide important criteria for evaluating the predictive validities of the RVP scales, because of the great importance of educational achievements in qualifying youth for occupational opportunities today and the corresponding need for emphasis on educational planning as the major ingredient of career planning during school years.

In the 1963 interview (end of senior year in high school) there was considerable discussion of the kinds and degrees of thought and counsel the students had taken in planning their educational and vocational activities and aspirations. Two variables were scaled from the resulting protocol material, the first called "extent of educational planning" and the second called "extent of occupational planning." For each variable the protocol was rated on a three-point scale. On educational planning, 17 subjects were rated <u>poor</u>, 17 were rated <u>adequate</u>,

and 76 were rated high. These last had all sought and considered the counsel of at least one qualified person outside the family. On occupational planning, 7 subjects were rated poor, 35 were rated adequate, and 68 were rated high. Obviously the rating scheme did not yield optimal distributions. Nevertheless, when the predictive validities of the RVP scores against these criteria were studied there was a very interesting result. In short, the 8th RVP scores had moderately significant relationships with both the extent of educational planning variable and the extent of occupational planning variable, while the 10th RVP failed to relate significantly to either educational planning or occupational planning. Here is a 1963 criterion for which the 1958 interview scales have validity and the 1961 interview scales do not. This reinforces the contention that, in general, the Readiness for Vocational Planning scores collected early in the eighth grade have comparable predictive validities to those of the RVP scores collected late in the tenth grade.

3. Family-Related Criteria

Tiedeman and O'Hara have directed attention to family variables in the development of careers by giving the heading of family equal position with two others, education and reciprocity, in their "psychosocial theory of career" (1963). Interdependencies of the RVP scales and family-related have been sought, with consistently disappointing results. Socio-economic level of the family was not significantly related to the 8th RVP, nor was father's educational level. Following Super's precedent, a variable called "socio-economic accessibility of occupational preference" was contrived by subtracting the father's occu-

pation and subject's preference were rated on the seven-point Hamburger scale, and as previously noted, no subject's preference fell at either of the lowest two points on the scale. In 1958 there were 22 subjects who scored zero on accessibility, since their preferences were at the same level as their fathers' occupations, while in 1961 there were 20 who scored zero, and 20 again in 1963. All the rest of the subjects had positive accessibility scores indicating aspirations higher on the socio-economic scale than their fathers' occupations. In 1958 there were 32 subjects who scored one, 28 who scored two, 21 who scored three, and 7 who scored four. In 1961 there were 40 subjects who scored one, 27 who scored two, 17 who scored three, 5 who scored four, and one subject actually scored a five. In 1963, 41 subjects scored one, 29 subjects scored two, 16 scored three, 3 scored four, and again one subject scored a five. Obviously this sample of youth contains many who aspire to substantially improved socio-economic circumstances. In their verbal behaviors in the three interviews they have acted out their loyalty to the core of the American dream. Observing that 42 of their subjects came from families rated as levels 5, 6, and 7 on the Hamburger scale, the authors wish these young people well in their pursuit of happiness through upward mobility.

The 8th RVP scores showed modest concurrent validity against the accessibility criterion for 1958. It was expected that RVP would be able to predict which youngsters displayed high aspirations relative to the socio-economic positions of their families, but this was not the case. Neither the 1961 nor the 1963 accessibility distributions showed significant dependence on the 8th RVP or the 10th RVP. If theoreticians

are correct in the emphasis they are placing on the role of family-related determinants in career processes, researchers need to show greater ingenuity in scaling family-related variables of greater subtlety and potency than the ones incorporated in this inquiry.

4. Conclusions

During these first five years of the longitudinal study, the youths in the sample have been in the tentative substage of the exploratory stage of career development, in which the developmental task is crystalization of a vocational preference. Super, whose analysis this is, has said of this age in life:

> During this period the teen-ager is expected by society to begin to formulate ideas as to fields and levels of work which are appropriate for him, self and occupational concepts which will enable him, if necessary, to make tentative choices, that is, to commit himself to a type of education or training which will lead him toward some partially specified occupation. The preference may still be vague. (Super, 1963, p. 81)

The authors contend that the eight RVP variables represent self and occupational concepts (seeing educational concepts as part of occupational concepts), and that the fields and levels of occupational preferences, the educational aspirations, the constancy of such preferences and aspirations over time, represent suitable career criterion variables for studies of the predictive validities of the RVP scales in this developmental stage. In pointing out the perhaps unrealistically high aspirations of the sample members, in terms of their educational and occupational objectives, we have not meant to be critical. Actually we applaud these high goals as commendable at this life stage. It will be a little sad to observe the sobering impact of future developments on some of these burgeoning careers.

Some disturbing failures of predictive validity for the RVP scales have been uncovered. It is not too surprising that the Roe group, or field and enterprise, of occupational preferences in this life stage cannot be predicted, but it is too bad not to be able to predict group and level consistency. Also, there is a challenge for those who stress family-related determinants in career theory in the non-predictability of family socio-economic level, father's educational level, and especially the socio-economic accessibility of occupational preferences.

The positive congruent predictive validities for the RVP scales located in this research include socio-economic level of occupational preference, Roe level of occupational preference, curriculum choice, educational aspirations, curriculum constancy, extent of educational planning, and extent of vocational planning. Thus, there definitely are some career criterion variables in this developmental stage which are dependent on the Readiness for Vocational Planning self concept scales.

The fact that in the research to date, the eighth grade RVP scores have shown much the same kinds and amounts of predictive validity as the tenth grade RVP scores, collected two and a half years later, suggests that career development theory, at least as applied to eastern metropolitan youths, may be underestimating the degrees of vocational maturity achieved in the junior high school years.

CHAPTER SEVEN

Validities for Two Years Out of High School

One of the major purposes of the Career Development Study has been to establish predictive validities against longitudinal development criteria for the eight Readiness for Vocational Planning scales, and especially to compare the validities of RVP scores collected early in the eighth grade with the validities of RVP scores collected late in tenth grade. Career theoreticians have held that children in the eighth grade are for the most part involved in a phantasy stage of career development, and are lacking sufficient maturity to project self-images that accurately prefigure their futures. By late tenth grade, however, young people have for the most part fixed themselves in high school curricula and patterns of academic development which strongly prefigure post-high-school vocational and educational developments. It makes sense to suppose that self-images projected in interviews late in the tenth grade would reflect considerably greater maturity and would have considerably greater predictive validities for future vocational and educational adjustments. Nevertheless, comparisons of predictive validities for criteria collected in senior year in high school, reported in Chapter Six, indicate very similar kinds and degrees of predictive validities for 8th grade and 10th grade RVP score sets. This chapter reports a series of predictive validity studies for criteria collected in interviews conducted when the subjects were two years out of high school. A surprising and challenging generalization for career theoreticians emerges from these studies. The chapter also describes the

rationale for coding from the two-years-out protocols a dichotomous criterion variable representing the judged success of the immediate post-high-school vocational adjustment. The authors believe this to be a very significant criterion for the RVP scales, probably the most significant criterion available to date. They feel that it represents a type of criterion variable which must play a heavy role in the future of the Career Development Study, as the vocational adjustments of the subjects harden into fixed patterns, and evaluations of the goodness of those patterns, from both psychological and sociological viewpoints, becomes inevitable. The authors do not seek total objectivity in what are, after all, studies of people being conducted by people and for people. The values of the subjects are obviously relevant. The values of the society, as represented by the scientists conducting the study, also seem to be relevant.

The first two-years-out criterion variable is educational aspirations. The responses of the 110 young men and women fall into four groups: 1) 14 subjects aspiring to attend graduate school after graduating from college; 2) 36 subjects aspiring to graduate from college as a terminal educational achievement; 3) 31 subjects aspiring to complete, or satisfied with having completed, a junior college or technical or vocational institute program; and 4) 29 subjects aspiring to no post-high-school education. Table 7.1 indicates that the 8th RVP scores provide a basis for predicting educational aspirations expressed seven years later by the young adults the junior high school youths have become. The significant RVP variables for predicting this

criterion are Factors in Curriculum Choice, Evidence for Self Ratings, Verbalized Strengths and Weaknesses, and Values. The table also indicates that 10th RVP scores do not provide a basis for predicting educational aspirations five years after they are collected.

As might be expected, only one discriminant function is required to retain most of the discriminating power of the 8th RVP battery for the educational aspirations criterion. The alignment of the groups is:

	Educational Asps. Group	Discriminant Centroid
1	graduate school	8.1
2	college	6.2
3	junior college or institute	4.8
4	no post-h.s. asps.	4.1

Roe group for 1965 occupational aspirations (1965 is the interview year for the two-year-out interviews) provides the second criterion. Because of the small number of subjects available, the Roe groups are combined to provide five categories on this criterion: 1) 24 subjects whose aspirations include housewife, physical labor, social and personal service, and no aspiration; 2) 28 subjects whose aspiration is business; 3) 16 subjects whose aspiration is industry and government; 4) 17 subjects whose aspiration is mathematics, physical science, biological science, or medicine; and 5) 25 subjects whose aspirations include education and humanities, arts, and being a student. For this criterion, neither the 8th nor the 10th RVP score sets provide a significant basis for prediction, although the 8th RVP scores come

much closer to significance. The next chapter discusses the problem of using Roe groups in a research with a small number of subjects in some detail.

Roe level for 1965 occupational aspirations provides the third criterion variable. The subjects are placed in four levels, as follows: 1) 44 subjects aspiring to doctors and highest managerial, or professional and managerial levels; 2) 17 subjects aspiring to the semi-professional and low managerial level; 3) 32 subjects aspiring to the skilled support and maintenance level; and 4) 17 subjects aspiring to the semi-skilled, unskilled, and no aspiration levels. Parenthetically, the authors note that 44 subjects aspiring to Roe levels one and two, out of 110 young adults, represents a commendable reservoir of ambition in this age group. As shown by Table 7.1, the 8th grade RVP scores provide a basis for predicting this 1965 Roe level of occupational aspirations criterion. The significant predictors are Factors Considered in Curriculum Choice, Values, Verbalized Strengths and Weaknesses, and Evidence for Self Ratings, in that order of importance. This is the same subset that predicts educational aspirations, although the order is modified. The first discriminant function accounts for 70% of the discriminating power of the battery, and the groups are nicely aligned on it. The second function accounts for 24% of the discriminating power, and separates the junior college and technical-vocational institute people from the others.

Roe Level of Occ. Asps. Group		Discriminant I Centroid	Discriminant II Centroid
1	high and medium professional, managerial	7.9	2.7
2	semi-professional and low managerial	5.9	1.8
3	skilled labor	5.2	3.4
4	semi-skilled and unskilled; no aspirations	5.0	1.7

Again, the 10th RVP scores fail to provide a basis for predicting this criterion.

The Roe group of the actual occupation of the subject at the time of the 1965 interview provides another criterion variable. The memberships of the four groups are: 1) 23 subjects who are housewives, physical laborers, or unemployed; 2) 30 subjects who are employed in the business world; 3) 15 subjects distributed around among industry and government, nursing, and the arts (we have two dancers); and 4) 42 subjects who are students. The 8th RVP scores provide a basis for predicting these group memberships, with the significant variables being, in order of usefulness, Evidence for Self Ratings, Factors Considered in Curriculum Choice, Verbalized Strengths and Weaknesses, Values, and Factors Considered in Occupational Choice. There are two directions for the group differences in the 8-dimensional RVP space, with the first discriminant function accounting for 69% of the power of the battery for this criterion, and the second accounting for 23%. The centroids of the groups are:

	Roe Group of Actual 1965 Occupation	Discriminant I Centroid	Discriminant II Centroid
1	housewives, laborers, unemployed	5.9	4.1
2	business	5.0	4.7
3	industry and government	4.1	4.0
4	students	4.9	4.5

Table 7.1 reveals that again the 10th RVP fails to predict this criterion.

The next criterion is Roe level of actual 1965 occupation. The memberships of the four groups are: 1) 29 subjects who are students pursuing educational paths to Roe level one and level two occupations; 2) 34 subjects employed in semi-professional, low managerial, or skilled labor positions, or training for such; 3) 29 subjects doing semi-skilled labor; and 4) 18 subjects doing unskilled labor or unemployed. Note that only 29 subjects are actively pursuing educational paths to occupations at levels one and two, yet we have observed above that 44 subjects still express aspirations for occupations at those levels. Phantasy is not solely a possession of children. Again, the 8th RVP is able to predict a Roe level criterion, and again the useful predictors come from the same subset of variables: Evidence for Self Ratings, Verbalized Strengths and Weaknesses, and Values. Two discriminant functions are required, with the first accounting for 70% of the power of the battery, and the second accounting for 24%. The arrangement of the group centroids is:

	Roe Level of Actual 1965 Occupation	Discriminant I Centroid	Discriminant II Centroid
1	students in college	4.6	2.0
2	semi-professional, low managerial, and skilled	5.3	1.7
3	semi-skilled labor	3.7	1.9
4	unskilled or unemployed	5.2	2.3

Once again, the 10th RVP does not provide any basis for predicting this criterion.

These criteria are interesting, but they are not fully satisfying. None of them are able to express adequately the basic phenomenal quality of the subject's life adjustment in the vocational arena. What we really want to get at is whether he is a satisfied, healthy, growing young adult, or whether he is a frustrated, stagnating person. Of course, a one hour interview is not going to provide an absolutely trustworthy basis for judging the quality of a person's general vocational adjustment. Nevertheless, the interview did yield information on the occupational aspirations of the subject, his educational aspirations, and his present employment. The authors decided to risk a value judgment based on the comparison of these items of information. It was decided that subjects would be rated as <u>successful</u> if they are maintaining, refining, or enhancing their career objectives; they would be rated as <u>unsuccessful</u> if their current employment obviously and seriously contradicts their current aspirations; and they would be rated as <u>neutral</u> if they are currently engaged in the roles of housewife or serviceman, on the grounds that it is premature to judge the actual meanings of these roles for career phenomenology. These are

subjective ratings, to be sure, but the authors can testify that they are able to agree on the proper score assignment for every subject with no difficulty, although they do not always agree on everything. The distribution of these ratings is: 42 successful, 54 unsuccessful, and 14 neutral. If these ratings are any good, this is a distressing distribution, since it claims that half our subjects are currently in trouble in their vocational adjustments. Over the years we have developed a warm regard for these young people, and it is not pleasent to contemplate this distribution.

Discriminant analyses were run on the 96 subjects who have received S and U ratings, omitting the 14 neutrals. The 8th grade RVP battery is a basis for predicting membership in the S and U rating groups, as shown by Table 7.1. The predicting variables, in order of significance, are Evidence for Self Ratings, Verbalized Strengths and Weaknesses, Interests, Values, and Factors Considered in Occupational Choice. The discriminant function mean for the S's is 4.8, and for the U's is 3.4, on a function that has a standard deviation of 1.7, so that the means are pretty well separated. The 10th grade RVP battery was unable to provide a basis for predicting this criterion.

In short, the great surprise of this chapter is that the Readiness for Vocational Planning scale scores based on the 8th grade interviews are consistently able to predict criterion variables based on interviews conducted seven years later, when the subjects are two years out of high school. In contrast, the RVP scale scores based on the 10th grade interviews are not able to predict a single criterion variable based on interviews five years later. The authors are

disappointed in the poor showing in this chapter of the 10th RVP score set, and wish to remind the reader that they have previously reported a number of predictive validities for this score set. However, it seems clear that the implication is that some important degree of vocational maturity early in the eighth grade is a reality for many of our subjects, and presumably therefore for many other youngsters, in that in the eighth grade the subjects are able to project self-images in interviews the dimensions of which have significant predictive validities for subsequent career developments.

Beyond the contrast between the 8th and 10th RVP sets, the most interesting finding is that judged success or failure in career adjustment two years out of high school is significantly related to the 8th RVP score set. The criterion provided by these judgments is further explored in the next chapter.

Table 7.1

Multivariate Analysis of Variance Results for 8th and 10th Grade RVP Scales Versus Criteria Collected Two Years Out of High School

Criterion	Predictors	Λ	df1	df2	F	p	Significant RVP Scales
Educational aspirations	8th RVP	.622	24	288	2.13	<.01	I, V, III, VII
" "	10th RVP	.785	24	288	1.05	>.05	
Roe group occupational	8th RVP	.671	32	363	1.30	>.05	
preferences	10th RVP	.755	32	363	.90		
Roe level occupational	8th RVP	.672	24	288	1.76	<.05	I, VII, III, V
preferences	10th RVP	.753	24	288	1.23	>.05	
Roe group actual	8th RVP	.695	24	288	1.60	<.05	V, I, III, VII, II
occupation	10th RVP	.784	24	288	1.05	>.05	
Roe level actual	8th RVP	.658	24	288	1.86	<.01	V, III, VII
occupation	10th RVP	.773	24	288	1.11	>.05	
Success Rating	8th RVP	.814	8	87	2.49	<.05	V, III, VI, VII, II
" "	10th RVP	.917	8	87	.98		

CHAPTER EIGHT

Career Patterns Over Seven Years: The Data and a Model

One of the major empirical products of the Career Development Study to date is 111 career patterns representing seven years of early career development for 57 boys and 54 girls who have been interviewed four times between the eighth grade and two years out of high school. Table 8.1 displays the occupational aspirations of the subjects at each of the interviews, and the actual occupational placement two years out of high school. The research literature on careers provides no comparable opportunity to view the vocational aspiration histories of adolescents as clearly as they can be viewed in this table. The authors hope that the availability of this table will encourage career theoreticians to test their notions of what early careers look like. Perhaps the outstanding aspect of the table is the variety it displays both in specific vocational titles and in seven-year patterns. In the course of the four interviews the subjects mentioned over 100 job titles. For some subjects the pattern is one of increasing aspiration, for others of declining aspiration. Quite a few subjects stay with the same vocational choice for all four interviews, perhaps with some increase in specificity. For many subjects the actual 1965 occupation is consistent with the aspirations over seven years, but for others it is terribly inconsistent. One has the sense of observing careers in progress as he studies Table 8.1 One sees the warp of the fabric of real careers. The authors plan to maintain contact with these subjects for at least another five years, in order to extend this table. Vocational psychol-

Table 8.1

Occupational Aspirations in Four Interviews Over Seven Years, and Actual Occupation in 1965

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
MALES					
001	Printer	A. F. Electrician	Electrician	None	Military
002	Av. Engineer	Auto Designer	Mechanic	Engineer	Military
003	El. Engineer	El. Engineer	El. Engineer	Science	Student
004	Engineer	Minister	Social Worker	H. S. Teacher	Student
005	Doctor	Doctor	Teacher	Teacher	Student
006	None	Meteorologist	Meteorologist	Advertising	Store Clerk
007	Lawyer	Lawyer	Lawyer	Lawyer	Student
008	Navy	Accountant	Business Admin.	Business	Student
015	Architect	Architect	Architect.Draft.	Architect	Military
016	Accountant	Pharmacist	Accountant	Accountant	Truck Driver
017	Business	Dry Cleaning Bus.	Helicopter Tech.	Accountant	Office Clerk
018	Secretary	Civ. Engineer	El. Engineer	H. S. Teacher	Student
019	Bricklayer	Mathematician	Chem. Engineer	Coll. Teacher	Student
020	None	Artist	Commercial Art	None	Unemployed

Table 8.1
(Continued)

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
021	R.R. Engineer	Av. Technician	Meteorologist	Transit Job	Office Clerk
028	El. Engineer	Biologist	West Point	Doctor	Military
029	Engineer	E. Engineer	Chem. Engineer	Lawyer	Student
030	Florist	Researcher	Personnel Worker	Psych.Teacher	Student
031	Business	A. F. Academy	None	None	Student
032	Scientist	Electronics	Dentist	Dentist	Student
033	Scientist	Psychologist	Lawyer	Government	Student
040	Engineer	A. F. Pilot	A. F. Pilot	Accountant	Bank Clerk
041	Pilot	Game Warden	Conservation	Park Managem't	Student
042	Scientist	Teacher	Salesman	Business	H.S. Student
043	Engineer	Mechanic	History Teacher	Phys.Ed.Tchr.	H.S. Student
050	Scientist	None	Central Intell.	El. Engineer	Military
051	Ball Player	Bal Player	Bookkeeper	Truck Driver	Install Seat Covers
052	Doctor	Mechanic	None	Accountant	Installs Alum. Siding
053	Business	Teacher	H.S. Teacher	Accountant	Bank Clerk

Table 8.1
(Continued)

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
054	Accountant	Accountant	Accountant	Sales or Shipping	Shipper
055	Journalist	Phys.Ed.Tchr.	Own Business	Journalism	Constr.Laborer
056	Own Gas Stat.	Draftsman	Business Admin.	Banking	Bank Clerk
057	Doctor	Pilot	Public Relations	Photographer	Student
064	Musician	Military	Musician	Tradesman	Unemployed
065	A. F. Pilot	Draftsman	Advertising	IBM Programmer	IBM Operator
066	Baseball	Carpenter	Electronics	Clerk or Assembler	Unemployed
067	Draftsman	H.S. Teacher	Eng.Teacher	H.S. Teacher	Student
068	El. Engineer	Civ. Engineer	Constr. Business	Architect or Draftsman	Clock Assembler
069	Singer	Draftsman	Artist	Social Worker	Unemployed
076	Machinist	Machinist	Machine Operator	Draftsman	Machine Operator
077	Doctor	Accountant	Store Manager	Business	Military
078	T.V. Repairman	R.R. Engineer	R.R. Engineer	Sheet Metal Worker	Unemployed
079	Doctor	Pattern Maker	Pattern Maker	Technician	Military
080	Radio Repairman	Auto Mechanic	Electronics	Electronics	Mechanic

Table 8.1
(Continued)

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
081	Auto Mechanic	Truck Driver	Machinist	Truck Driver	Laborer
090	Mechanic	Auto Mechanic	Auto Mechanic	Own Truck Bus.	Military
092	Doctor	Coast Guardsman	Radio Announcer	None	Military
093	Doctor	Architect	Math Teacher	Economist or Lawyer	Student
095	Janitor	Mechanic	Fireman	Fireman	Gas Stat.Attend.
096	Machinist	Draftsman	Engineer	Engineer	Student
099	Engineer	Civ. Engineer	El. Engineer	Engineer	Student - Tech School
100	Mech. Engineer	Mech. Engineer	Scientist	El. Engineer	Student
102	Merchant	Military	Vetinarian	Own Business	Student
104	Engineer	Dentist	Cert.Pub.Account.	Factory Worker	Factory Worker
106	Chem. Engineer	Biologist	Biologist	Scientist	Student
108	Engineer	Musician	Music Teacher	Business	Assembler
110	Electronics	El. Engineer	El. Engineer	Science or Eng.	Student
FEMALES					
009	Nurse	Scientist	Teacher	Teacher	Student
010	Teacher	Teacher	Teacher	None	Student

Table 8.1
(Continued)

I.D.	8th Grade (1958	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
011	Teacher	Decorator	Teacher	Teacher	Student
012	Lawyer	Social Worker	Teacher	Teacher	Student
013	Nurse	Social Worker	Med. Secretary	Med. Secretary	Student
014	Teacher	H. S. Teacher	Psychologist	Social Worker	Student
022	Secretary	Teacher	Clerk	Secretary	Office Clerk
023	Rancher	Housewife	Cashier	Housewife	Housewife
024	Secretary	Office Worker	Secretary	Secretary	Office Clerk
025	Secretary	Legal Secretary	Secretary	Secretary	Bookkeeper
026	Secretary	Secretary	Stenographer	Housewife	Office Clerk
027	Secretary	Secretary	Hairdresser	Secretary	Office Clerk
034	Nurse	Nurse	Nurse	Nurse	Student Nurse
035	Model	Air Hostess	Dancer	Housewife	Housewife
036	Air Hostess	Elem. Teacher	H. S. Teacher	Housewife	Office Clerk
037	Actress	Linguist	U.N. Interpreter	Lang. Interpr.	Student
038	Teacher	H. S. Teacher	H.S.Eng.Teacher	H. S. Teacher	Student
039	Model	Elem. Teacher	Elem. Teacher	Teacher	Student

Table 8.1
(Continued)

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
044	Secretary	Secretary	Secretary	Bank Teller	Bank Teller
045	Secretary	Nurse	Dental Hygienist	Dental Hygienist	Student
046	Med. Secretary	Secretary	Legal Secretary	Housewife	Housewife
047	Teacher	Phys.Ed.Teacher	Elem. Teacher	Student	Housewife
048	Teacher	Air Hostess	Secretary	Airline Secret.	Student
049	Housewife	Hairdresser	Stenographer	Housewife	Secretary
058	Secretary	Secretary	Office Worker	Housewife	Office Clerk, Housewife
059	Teacher	Secretary	IBM Operator	Housewife	Office Clerk
060	Teacher	Nurse	Nurse	Med. Assistant	Hosp.Recept.
061	Secretary	Hairdresser	Typist	Civil Serv.Clerk	Unemployed
062	Singer	Hairdresser	Music Teacher	Singer	Office Clerk
063	Secretary	Air Hostess	Med. Technician	Dental Assist.	Student
070	Dancer	H. S. Teacher	Accountant	Head Bookkeeper	Bookkeeper, Housewife
071	Teacher	Accountant	Bookkeeper	Housewife	Office Clerk
072	Secretary	Secretary	Air Hostess	Hairdresser	Office Clerk
073	Secretary	Secretary	Office Work	Music School	Office Clerk, Housewife

Table 8.1
(Continued)

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
074	Secretary	Secretary	Housewife	Student (H.S.)	Housewife
075	Teacher	Secretary	Housewife	Housewife and Nurse	Housewife
082	Teacher	Government	H. S. Teacher	Housewife and Nurse	Housewife
083	Marine	Commercial Art	Office Worker	Housewife	Store Clerk
084	Vetinarian	Secretary	Secretary	Secretary	Store Clerk
085	Secretary	Secretary	Office Worker	Court Reporter	Office Clerk
086	Teacher	Teacher	Practical Nurse	Practical Nurse	Practical Nurse
087	Hairdresser	Store Clerk	Housewife	Housewife	Housewife
088	Teacher	Secretary	IBM Bookkeeper	Air Hostess	Office Clerk
089	Actress	Nurse	Nurse	Nurse	Student Nurse
091	Nurse	Hairdresser	Stenographer	Secretary	Office Clerk
094	Secretary	Stenographer	Stenographer	Insurance Underwriter	Secretary
097	Nurse	Nurse	Nurse	Nurse	Student Nurse
098	Teacher	Biologist	Biologist	Teacher	Student
101	Nurse	Nurse	Tailor	Housewife	Office Clerk
103	Nurse	Music Teacher	Music Teacher	Teacher	Waitress

Table 8.1
(Continued)

I.D.	8th Grade (1958)	10th Grade (1961)	12th Grade (1963)	1965 Aspiration	1965 Actual
105	Nurse	Nurse	Stenographer	Secretary	Office Clerk
107	Secretary	Secretary	Secretary	Secretary	Student
109	Dancer	Ballerina	Ballerina	Ballerina	Ballet Student
111	Model	Secretary	Fashion Designer	None	Housewife

ogy badly needs displays of this sort from other longitudinal studies.

Table 8.1 is extremely interesting data, but it is not psychology. The scientist must find ways to abstract and quantify the data of such a table. He requires a taxonomy of occupational titles to start with. The *Dictionary of Occupational Titles* prepared by the U. S. Department of Labor provides the best known classification system, but the authors considered it too atheoretical for their purposes. They were attracted to Anne Roe's two-way classification of vocations by types and by levels (Roe, 1954), which places each occupation in a cell at the intersection of a type (or group) and a level. Occupations falling in the same cell of the resulting lattice may be treated as an equivalence class in any further analysis, or the group codes and level codes may be utilized separately in further analyses. Table 8.2 defines the group and level codes, somewhat modified from Roe's codes, employed in the Career Development Study. This table then reports the complete taxonomy in the lattice based on these codes for all the titles mentioned in the four interviews. All the titles fall into 33 of the possible $9 \times 7 + 63$ equivalence classes of the lattice. In large scale researches of the future (such as Project TALENT) the best policy will be to use the equivalence classes of the occupational lattice as nominal scale units, but the small sample in the present study precludes such a strategy. Therefore, the authors have employed the nine group codes as a nominal criterion scale, and the seven level codes as an ordinal criterion scale.

The group and level codes for the occupational aspirations in the 8th, 10th, 12th grades, and two years out of high school, and for

actual occupation two years out, are arrayed in Table 8.3, as one way of abstracting and quantifying the data of Table 8.1. For both group and level the data provide five observations and four transitions per subject. A transition is the movement from a given observed position on a nominal or ordinal scale at one time to the same or a different position on the scale at the time of the next observation. The second part of this chapter attempts the fitting of formal probability models to these transitions. For the moment we remark simply that these numerical sequences represent measures of a process over time. The literature affords few similar sets of measurements of the career development process in adolescence. Table 8.3 also contains sequential coding of the high school curriculum planned (1958) or enrolled in (1961, 1963), and of the educational aspirations of each of the subjects at each of the interviews. These sections of the table provide two transitions for high school curriculum and three transitions for educational aspirations to which probability models will also be fitted.

Donald Super (1963) recently provided a stimulating discussion of a set of behavior modes which he believes characterize several ways of coping with the developmental tasks posed by career processes. Table 8.4 defines these coping behaviors. The authors have judged each of the vocational aspiration transitions and the 1965 aspiration to actual vocation transition, in terms of these categories. Their judgments have also reflected the educational histories of the subjects. Table 8.5 records the coping behavior codes assigned to the four available transitions. Since these codes are based on consideration of transitions over time from lattice cell to lattice cell, and involve a qualitative rating of

Table 8.2

Occupational Lattice, Based on Modified Roe Groups and Levels with a Taxonomy of All Occupations Mentioned Over Seven Years

I. Occupational Groups

0 Unemployed, or No Aspiration; and Housewife
1 Physical
2 Social and Personal Service
3 Business
4 Industry and Government
5 Mathematics and Physical Sciences
6 Biological and Medical Sciences
7 Education and Humanities
8 Arts
9 Student

II. Occupational Levels

1 Doctors and Highest Managerial
2 Professional and Managerial
3 Semi-professional and Low Managerial
4 Skilled Support and Maintenance
5 Semi-skilled Support and Maintenance
6 Unskilled Support and Maintenance
7 Unemployed, or No Aspiration

III. Taxonomy of Occupations

Group	Level	Occupational Titles
0	4	Housewife
0	7	Unemployed, or No Aspiration
1	3	Ball Player, Rancher
1	4	Air.Hostess, Hairdresser, Tailor, Bricklayer
1	5	Truck Driver, Bus Driver, Fireman, Janitor
1	6	Laborer, Installer, Waitress
2	2	Social Worker, Personnel Worker, Minister
3	2	Accountant, Businessman, Business Administrator, Own Business
3	3	Advertising, Salesman, IBM Programmer, Bookkeeper, Merchant, Florist, Insurance Underwriter
3	4	Secretary, Stenographer
3	5	Store Clerk. Office Clerk, Bank Clerk, Cashier, IBM Operator, Typist
3	6	Gas Station Attendant

Table 8.2
(Continued)

Group	Level	Occupational Titles
4	2	All Engineers, Auto Designer, Architect, Military (Officer Ranks), Government (College Graduates)
4	3	Pilot, C.I.A., Patternmaker, Technician
4	4	Printer, Electrician, Military (Enlisted Ranks), Machinist, Mechanic, Technician (Less Training), Carpenter, Other Trades, R.R. Engineer
4	5	Machine Operator, Sheet Metal Worker, Civil Service Clerk
4	6	Assembly-line Worker
5	1	Mathematician
5	2	Scientist, Researcher, Mathematics Teacher
5	3	Meteorologist, Electronics
5	4	Electronics (Less Training), TV and Radio Repairman
6	1	Doctor
6	2	Dentist, Nurse, Pharmacist, Biologist, Psychologist
6	3	Vetinarian, Medical Assistant or Technician, Dental Hygienist, Conservationist, Game Warden, Park Manager
6	4	Dental Assistant, Practical Nurse, Medical Secretary
6	5	Hospital Receptionist
7	2	All Teachers, Lawyer, Linguist, Journalist, Economist
8	3	Actress, Ballerina, Musician, Singer, Decorator
8	4	Artist, Commercial Artist, Dancer, Model, Photographer, Radio Announcer
9	2	College Student
9	3	Junior College Student
9	4	Training School Student
9	6	High School Holdover

Table 8.3

High School Curricula, Educational Aspirations, Roe Level and Roe Group of Occupational Aspirations and of 1965 Actual Occupation, for 110 Career Development Study Subjects

	H.S. Curricu.			Educational Aspirat.				Roe Level					Roe Group				
								Occ.		Aspir.		Act.	Occ.		Aspir.		Act.
	58	61	63	58	61	63	65	58	61	63	65	65	58	61	63	65	65
MALES																	
001	5	3	6	5	5	6	6	4	4	4	7	4	4	4	4	0	4
002	5	1	1	2	2	5	5	2	2	4	2	4	4	4	4	4	4
003	1	1	1	1	1	2	1	2	2	2	2	2	4	4	4	5	9
004	5	1	1	2	2	2	2	2	2	2	2	2	4	7	2	7	9
005	1	1	1	1	1	2	2	1	1	2	2	2	6	6	7	7	9
006	5	1	1	2	2	2	2	7	3	3	3	5	0	5	5	3	3
007	1	1	1	1	1	2	1	2	2	2	2	2	7	7	7	7	9
008	5	1	1	2	1	2	1	2	2	2	2	2	4	3	3	3	9
015	2	3	3	4	4	4	2	2	2	3	2	4	8	8	8	8	4
016	2	1	1	2	2	2	3	2	2	2	2	5	3	6	3	3	1
017	2	2	2	4	5	5	2	3	3	4	3	5	3	3	4	3	3
018	1	4	4	2	2	2	1	4	2	2	2	2	3	4	4	7	9
019	2	1	1	4	3	2	2	4	1	2	2	2	1	5	4	7	9
020	2	4	4	5	4	3	5	7	4	4	7	7	0	8	8	0	0
021	2	1	1	5	4	5	5	4	4	3	5	5	4	4	5	1	3
028	1	1	1	2	2	2	2	2	2	2	1	4	4	6	4	6	4
029	1	1	1	2	3	2	1	2	2	2	2	2	4	4	4	7	9
030	1	1	4	2	2	2	1	3	2	2	2	2	3	5	2	7	9
031	1	1	1	2	2	2	2	2	2	7	7	2	3	4	0	0	9
032	1	1	1	1	2	2	1	2	3	2	2	2	5	5	6	6	9

Table 8.3
(Continued)

I.D.	Curricu.			Ed. Asp's.				Roe Level Occ. A.					Roe Group Occ. A.				
	58	61	63	58	61	63	65	58	61	63	65	65A	58	61	63	65	65A
033	1	1	1	1	1	2	1	2	2	2	2	2	5	6	7	4	9
040	1	1	1	2	2	4	2	2	2	2	2	5	4	4	4	3	3
041	1	1	1	2	2	4	2	3	3	3	3	2	4	6	6	6	9
042	1	4	4	2	2	4	2	2	2	3	3	6	5	7	3	3	9
043	1	2	1	2	4	2	2	2	4	2	2	6	4	4	7	7	9
050	1	1	1	2	2	4	2	2	7	3	2	4	5	0	4	4	4
051	2	2	2	5	5	4	5	3	3	4	5	6	1	1	3	1	1
052	1	2	4	1	4	5	3	1	4	7	2	6	6	4	0	3	1
053	1	1	1	2	2	2	3	3	2	2	2	5	3	7	7	3	3
054	1	1	1	2	2	2	2	2	2	2	5	6	3	3	3	3	3
055	1	1	1	2	2	4	2	2	2	3	2	6	7	7	3	7	1
056	3	3	2	5	4	4	4	3	4	3	3	5	3	4	3	3	3
057	1	1	1	1	2	2	2	1	3	3	3	3	6	4	3	8	9
064	1	4	4	2	5	4	4	3	4	3	4	7	8	4	8	4	0
065	1	1	1	2	2	4	4	2	4	3	3	5	4	4	3	3	3
066	1	4	2	2	4	5	4	3	4	4	6	7	1	4	4	4	0
067	1	4	4	2	3	2	3	4	2	2	2	2	4	7	7	7	9
068	1	1	1	2	2	4	3	2	2	3	4	6	4	4	3	4	4
069	1	1	1	3	2	2	4	3	4	3	2	7	8	4	8	2	0
076	2	3	3	4	4	4	4	4	4	5	4	5	4	4	4	4	4
077	1	2	2	1	2	5	4	1	2	3	3	4	6	3	3	3	4
078	3	3	3	5	5	5	5	4	4	4	5	7	5	4	4	4	0
079	1	3	3	1	4	5	2	1	3	3	3	4	6	4	4	4	4

Table 8.3
(Continued)

I.D.	Curricu.			Ed. Asp's.				Roe Level Occ. A.					Roe Group Occ. A.				
	58	61	63	58	61	63	65	58	61	63	65	65A	58	61	63	65	65A
080	3	3	3	4	5	5	4	4	4	4	4	5	5	4	5	5	4
081	6	6	6	6	6	6	6	5	5	4	5	6	4	1	4	1	1
090	2	3	3	4	4	5	5	5	5	4	3	4	4	4	4	3	4
092	1	1	1	1	3	2	2	1	2	4	7	4	6	4	3	4	0
093	1	1	1	1	3	2	1	1	2	2	2	2	6	8	5	7	9
095	3	3	6	5	5	6	5	5	5	5	5	6	1	4	1	1	3
096	1	1	1	2	2	2	2	4	4	2	2	2	4	4	4	4	9
099	1	1	1	2	2	2	2	2	2	2	2	3	4	4	4	4	9
100	1	1	1	2	2	2	2	2	2	2	2	2	4	4	5	4	9
102	1	1	1	2	2	2	1	3	2	3	3	2	3	4	6	3	9
104	1	1	2	2	1	2	4	2	2	2	6	6	4	6	3	4	4
106	1	1	1	2	2	2	1	2	2	2	2	2	4	6	6	6	9
108	1	4	4	2	2	2	4	2	3	2	3	6	4	8	8	3	4
110	1	1	1	2	2	2	1	3	2	2	2	2	5	4	4	5	9
FEMALES																	
009	1	1	1	2	2	2	2	2	2	2	2	2	6	5	7	7	9
010	5	1	1	2	2	2	2	2	2	2	7	2	7	7	7	0	9
011	1	1	1	2	2	2	2	2	3	2	2	2	7	8	7	7	9
012	1	1	1	1	1	2	1	2	2	2	2	2	7	2	7	7	9
013	5	1	1	1	2	4	2	2	2	4	4	3	6	2	6	6	9
014	1	1	1	2	1	2	2	2	2	2	2	2	7	7	6	2	9
022	2	2	2	5	2	5	4	4	2	5	4	5	3	7	3	3	3
023	1	2	2	5	5	5	5	3	4	5	4	4	1	0	3	0	0

Table 8.3
(Continued)

I.D.	Curricu.			Ed. Asp's.				Roe Level Occ. A.					Roe Group Occ. A.				
	58	61	63	58	61	63	65	58	61	63	65	65A	58	61	63	65	65A
024	2	2	2	4	4	4	4	4	5	4	4	5	3	3	3	3	3
025	2	2	2	5	4	4	4	4	4	4	4	5	3	3	3	3	3
026	2	2	2	4	2	5	5	4	4	4	4	5	3	3	3	0	3
027	2	2	2	5	5	4	4	4	4	4	4	5	3	3	1	3	3
034	1	1	1	3	3	3	2	2	2	2	2	3	6	6	6	6	9
035	1	2	2	3	5	5	5	4	4	4	4	4	8	1	8	0	0
036	1	1	1	4	2	2	4	4	2	2	4	5	1	7	7	0	3
037	1	1	1	2	2	2	2	3	2	2	2	2	8	7	7	7	9
038	1	1	1	2	2	2	2	2	2	2	2	2	7	7	7	7	9
039	1	1	1	2	2	2	2	4	2	2	2	2	8	7	7	7	9
044	2	2	2	5	5	5	5	4	4	4	5	5	3	3	3	3	3
045	2	1	1	5	3	2	2	4	2	3	3	3	3	6	6	6	9
046	2	2	2	4	3	4	5	4	4	4	4	4	6	3	3	0	0
047	1	1	1	2	3	2	2	2	2	2	2	4	7	7	7	9	0
048	1	2	2	2	4	4	4	2	4	4	4	4	7	1	3	3	9
049	2	2	2	5	6	5	5	4	4	4	4	4	0	1	3	0	3
058	1	2	2	4	4	5	5	4	4	5	4	4	3	3	3	0	0
059	1	4	2	2	4	5	5	2	4	5	4	5	7	3	3	0	3
060	1	1	1	2	2	3	4	2	2	2	3	5	7	6	6	6	6
061	1	4	4	4	4	5	4	4	4	5	5	7	3	1	3	4	0
062	2	1	4	4	4	4	4	3	4	2	5	3	8	1	7	3	8
063	2	1	1	4	3	4	4	4	4	3	4	4	3	1	6	6	9
070	1	1	2	2	2	4	5	3	2	2	3	5	8	7	3	3	3

Table 8.3
(Continued)

I.D.	Curricu.			Ed. Asp's.				Roe Level Occ. A.					Roe Group Occ. A.				
	58	61	63	58	61	63	65	58	61	63	65	65A	58	61	63	65	65A
071	4	2	2	3	4	5	5	2	2	4	4	5	7	3	3	0	3
072	1	2	2	5	4	5	5	4	4	4	4	5	3	3	1	1	3
073	2	2	2	5	4	4	4	4	4	5	4	4	3	3	3	8	0
074	1	2	6	2	5	6	5	4	4	4	6	4	3	3	0	9	0
075	1	2	2	2	4	5	4	2	4	4	2	4	7	3	0	6	0
082	1	1	1	2	2	2	5	2	3	2	2	4	7	4	7	6	0
083	3	2	2	5	4	5	5	4	4	5	4	5	4	8	3	0	3
084	2	2	2	4	4	2	5	3	4	4	4	6	6	3	3	3	3
085	2	2	2	4	4	5	4	4	4	5	4	5	3	3	3	4	3
086	1	1	1	2	1	3	4	2	2	4	4	4	7	7	6	6	9
087	3	2	6	5	5	6	6	4	6	4	4	4	1	3	0	0	0
088	2	2	2	2	4	4	5	2	4	5	4	5	7	3	3	1	3
089	1	1	2	2	4	4	2	3	2	2	2	3	8	6	6	6	9
091	1	2	2	3	4	5	5	2	4	4	4	5	6	1	3	3	3
094	2	2	2	5	5	5	5	4	4	4	3	4	3	3	3	3	3
097	1	1	1	2	4	3	2	2	2	2	2	3	6	6	6	6	9
098	1	1	1	5	2	2	1	2	2	2	2	2	7	6	6	7	9
101	1	2	2	4	4	4	5	2	2	4	4	5	6	6	1	0	3
103	1	1	1	3	2	2	2	2	2	2	2	6	6	7	7	7	1
105	1	1	2	2	4	5	3	2	2	4	4	5	6	6	3	3	3
107	5	1	1	3	4	4	4	4	4	4	4	5	3	6	3	3	3
109	1	1	1	5	3	5	2	3	3	3	3	3	8	8	8	8	9
111	1	2	2	4	4	4	5	4	4	3	7	4	8	3	8	0	0

Table 8.3
(Continued)

Curriculum codes:

1 = college preparatory

2 = business

3 = industrial arts

4 = general

5 = no choice (1958)

6 = dropout

Educational Aspiration codes:

1 = graduate school after college

2 = four year college degree

3 = junior college or nursing degree

4 = post high school technical or trade school

5 = high school graduation only

6 = some high school only

Roe Level and Roe Group codes: see Table 8.2

Table 8.4

Super's Coping Behaviors and Gribbons and Lohnes' Differential Career Processes

	I. Coping Behaviors	
1	Floundering	Between-groups change of occupation with no increase in achieved level
2	Trial	Within-group change of occupation resulting in a narrowing of or refinement of goals
3	Stagnation	Remaining in a lattice cell too long, with resulting deterioration of status or opportunity
4	Instrumentation	Goal-directed changes (for example, entering an educational or training program)
5	Establishment	Stabilization in a satisfactory occupation
	II. Differential Career Processes	
1	Constant Maturity	Consistent, persistent, realistic pursuit of the first stated goal
2	Emerging Maturity	Passage through the stages and tasks of Super's developmental model
3	Degeneration	Progressive deterioration of aspirations and achievement, accompanied by frustration and loss of status
4	Constant Immaturity	Persistent fixation on phantastic, unrealistic goals, with no advances in achieved level

Table 8.5

Differential Career Processes, 1965 Success Ratings, and Transitional Coping Behaviors for 111 C.D.S. Subjects

I.D.	Sex	D.C.P.	1965 Succ.	Transitional Coping Behaviors 58/61	61/63	63/65	65/65A
Males							
001	1	3	3	1	5	1	3
002	1	3	3	1	1	1	3
003	1	1	1	5	5	2	4
004	1	2	1	1	2	2	4
005	1	2	1	5	1	5	4
006	1	2	2	1	5	1	3
007	1	1	1	5	5	5	4
008	1	2	1	1	2	5	4
015	1	4	3	5	5	2	3
016	1	2	2	1	1	5	3
017	1	4	2	2	1	1	3
018	1	4	1	1	2	1	4
019	1	2	1	1	1	1	4
020	1	2	2	1	2	1	3
021	1	4	2	1	1	1	3
028	1	2	3	1	1	1	3
029	1	1	1	2	2	1	4
030	1	3	1	1	1	2	4
031	1	2	1	1	1	1	4
032	1	2	1	2	1	5	4

Table 8.5
(Continued)

I.D.	Sex	D.C.P.	1965 Succ.	Transitional Coping Behaviors 58/61	61/63	63/65	65/65A
033	1	2	1	2	1	2	4
040	1	3	2	1	5	1	3
041	1	2	1	1	2	2	4
042	1	3	2	1	1	2	3
043	1	4	2	1	1	1	3
050	1	3	3	1	1	1	3
051	1	3	2	5	1	1	3
052	1	3	2	1	1	1	3
053	1	2	2	1	5	1	3
054	1	1	2	5	5	1	3
055	1	3	2	1	1	1	3
056	1	2	1	1	1	1	2
057	1	2	1	1	1	1	4
064	1	4	2	1	1	1	3
065	1	4	2	1	1	1	3
066	1	4	2	1	1	1	3
067	1	4	1	1	2	5	4
068	1	3	2	2	2	2	3
069	1	4	2	1	1	1	3
076	1	3	2	5	1	1	3
077	1	3	3	1	1	2	3
078	1	4	2	1	5	1	3
079	1	2	3	1	5	2	3

Table 8.5
(Continued)

	I.D.	Sex	D.C.P.	1965 Succ.	Transitional Coping Behaviors 58/61	61/63	63/65	65/65A
	080	1	2	2	1	1	5	3
**	081	1	3	2	1	1	1	3
	090	1	1	3	5	5	1	3
	092	1	4	3	1	1	1	3
	093	1	2	1	1	1	1	4
	095	1	3	2	1	1	5	3
	096	1	2	1	1	2	5	4
	099	1	2	1	2	2	2	4
	100	1	2	1	1	2	2	4
	102	1	2	1	1	1	1	4
	104	1	3	2	1	1	1	3
	106	1	2	1	1	5	2	4
	108	1	3	2	1	2	1	3
	110	1	1	1	5	5	2	4
	Females							
	009	2	2	1	1	1	5	4
	010	2	1	1	5	5	1	4
	011	2	2	1	1	1	5	4
	012	2	2	1	2	2	5	4
	013	2	2	1	2	2	5	4
	014	2	2	1	5	2	2	4
	022	2	3	2	1	1	1	3
	023	2	4	3	1	1	1	5

Table 8.5
(Continued)

I.D.	Sex	D.C.P.	1965 Succ.	Transitional 58/61	61/63	Coping 63/65	Behaviors 65/65A
024	2	2	2	2	2	2	3
025	2	1	2	5	5	5	3
026	2	1	2	5	5	1	3
027	2	3	2	5	1	1	3
034	2	1	1	5	5	5	4
035	2	4	3	1	1	1	5
036	2	2	2	1	2	1	3
037	2	2	1	1	2	5	4
038	2	1	1	5	5	5	4
039	2	2	1	1	5	5	4
044	2	1	2	5	5	1	3
045	2	2	1	1	2	5	4
046	2	1	3	5	5	1	5
047	2	1	2	5	5	5	3
048	2	2	1	1	1	2	4
049	2	4	2	1	1	1	3
058	2	3	3	5	2	1	5
059	2	3	2	1	1	1	3
060	2	2	2	1	5	2	3
061	2	3	2	1	1	1	3
062	2	4	2	1	1	1	3
063	2	2	1	1	1	2	4
070	2	3	1	1	1	2	4
071	2	2	2	1	2	1	3

Table 8.5
(Continued)

I.D.	Sex	D.C.P.	1965 Succ.	Transitional Coping Behaviors 58/61	61/63	63/65	65/65A
072	2	4	2	5	1	1	3
073	2	3	2	5	2	1	3
074	2	3	2	5	1	5	3
075	2	3	2	1	1	5	3
082	2	2	2	1	1	1	3
083	2	4	2	1	1	1	3
084	2	2	2	1	5	5	3
085	2	3	2	5	2	2	3
086	2	3	2	5	1	1	4
087	2	3	3	1	1	5	5
088	2	3	2	1	1	1	3
089	2	2	1	1	5	5	4
091	2	2	2	1	1	2	3
094	2	1	2	5	5	1	3
097	2	1	1	5	5	5	4
098	2	2	1	1	5	1	4
101	2	3	2	5	1	1	3
103	2	2	2	1	5	5	3
105	2	3	2	5	1	5	3
107	2	1	1	5	5	5	4
109	2	1	1	5	5	5	4
111	2	4	2	1	1	1	3

** No RVP data for this subject because of early school dropout.

the sequential behaviors of subjects in two year periods, they would seem to have much to offer as process variables. Later, the authors attempt to fit a formal model to these score vectors. Their immediate comment is that Super's categories probably apply better to later stages of career histories than they do to the adolescent stage. Perhaps the list needs to be augmented with some categories designed for application to early career behaviors.

The career patterns presented in Tables 8.1 and 8.3 encourage the authors to challenge the current view that all adolescents participate in <u>one</u> career development process, and have inspired the induction of an alternative theoretical notion, that is the conceptualization of a set of four <u>differential career processes</u> (DCP), to one of which each adolescent career pattern can be assigned. These assignments are made on the basis of information collected during the public school years, so that DCP categories may become significant predictive or diagnostic categories *vis a vis* post high school developmental and adjustment criteria.

Current career psychology hypothesizes a single developmental process as the major explanatory concept covering the observed career patterns of all American youth. The concept is detailed out in terms of a set of developmental stages and substages, each containing a unique set of developmental tasks (e.g., Super *et al.*, 1963). It is not claimed that all young people progress at the same rate through these stages, or indeed that all succeed in negotiating the entire course, but the same course is proposed for all to run. To the present authors, this blanket concept does not appear to apply to their data on seven years of career

development during adolescence for 111 youths of both sexes. Some of their subjects seem to be running the prescribed course, but more of them seem to be pursuing other, different courses. Therefore, they suggest the existence of early-emerging, persistent differential career processes.

If this new conceptualization has merit, it should be possible to assign one of these differential processes to each subject on the basis of observations collected during the junior and senior high school years. (The possibility of even earlier visibility of differential processes should be researched.) The assigned process would be the primary explanatory concept for each subject's career history. From it a prediction would be made of the trend the adult career pattern would exhibit.

Four provisionally delineated differential career processes have been named (see Table 8.4):

1. Constant Maturity
2. Emerging Maturity
3. Degeneration
4. Constant Immaturity.

Super's well-articulated theory of development through life stages and tasks actually seems to represent a detailed account of the second of these hypothetical processes. It explains the career patterns of a minority of youths. Similarly detailed analyses of the other three processes are needed. The authors wish to acknowledge that Super's concept of coping behaviors stimulated this analysis of differential processes, which seems to be a more natural way to organize the data

than to follow Super's way of treating all failures as aberrations in a single process. Also, what can Super's method do with the youngster who always knew what his future was to be, and who never deviated from a set path? In short, the authors feel that their four categories place less strain on their data than does the concept of a single developmental process. It may be helpful to view these processes as life styles, or as adjustment modes. Naturally, some individuals are going to change their modes of living in the courses of their personal histories, but it is suggested that a sizeable percentage of people will be correctly fixed for their adult years by assignments made during school years. So, once again it is suggested that everyone does not march to the beat of the same drum. Different groups of people act out in their vocational behaviors over time the implications of different internal dynamics. Career researchers need to locate the early signs from which youth may be sorted into explanatory and predictive categories, and to estimate the degrees of predictive validity *vis a vis* various criteria in adulthood of such assignments.

Table 8.5 reports the DCP codes assigned to each of the 111 subjects. The distribution of these codes, by sex and for total sample, is given in Table 8.6. It must be remembered that these codes were assigned on the basis of study of the junior and senior high school interviews with the subjects. They are not contaminated by judges' knowledge of the 1965 interview data. To provide an initial criterion for DCP, the subjects were judged at two years out of high school (1965) as successful or unsuccessful, on the basis of comparisons of their current aspirations and current employments. Chapter Seven discusses this rating

in detail, and Table 8.5 reports the success ratings for all subjects. These ratings are distributed by sex and for total sample in Table 8.7. Contingency tables for DCP versus Success Rating for total sample (Table 8.8) and for separate sexes (Tables 8.9 and 8.10) indicate that there is a significant relationship between DCP categories and Success Ratings, with the two healthy DCP categories (Constant Maturity and Emerging Maturity) leading to more Successful ratings, and the two unhealthy DCP categories (Degeneration and Constant Immaturity) leading to more Unsuccessful and Neutral ratings. This first evidence of predictive validity for the DCP categories strengthens the authors' conviction that this conceptualization may become quite useful to career psychologists.

The reader can imagine the excitement with which the authors anticipated the computer outputs for discriminant analyses on the four DCP groups in the eight-variable Readiness for Vocational Planning measurement space. He can also imagine their disappointment when neither the eighth-grade RVP ($F = .67$ with 24 and 287 d.f.) nor the tenth-grade RVP ($F = 1.34$ with 24 and 288 d.f.) proved able to discriminate DCP. In quiet desperation, the authors went back to the 41 interview items from which the eight RVP variables were scaled, to see if the discriminant analysis would generate a scaling scheme for the items capable of separating the DCP groups. Alas, neither the 41 eighth-grade item responses ($F = .92$ with 123 and 199 d.f.) nor the 41 tenth-grade item responses ($F = 1.01$ with 123 and 199 d.f.) were able to discriminate the DCP groups. Now they wonder if the finding here is anything other than that 110 subjects provide far too small a number of degrees of freedom for the study of separation of four groups in a 41-dimension

Table 8.6

Distributions of Differential Career Processes

D. C. P.	Frequencies		
	Males	Females	Both Sexes
1 = constant maturity	6	12	18
2 = emerging maturity	23	20	43
3 = degeneration	16	15	31
4 = constant immaturity	12	7	19
TOTALS	57	54	111

Table 8.7

Distributions of 1965 Success Ratings

Rating	Frequencies		
	Males	Females	Both Sexes
1 Successful (Maintaining careers)	23	19	42
2 Unsuccessful (Not maintaining careers)	25	30	55
3 Neutral[1] (Military and Housewives)	9	5	14
TOTALS	57	54	111

[1]All military are males in enlisted ranks. Five of twelve housewives have been rated neutral, one a success, and six as unsuccessful because they are admittedly frustrated in their career aspirations. A neutral rating indicates insufficient evidence on which to base a decision.

Table 8.8

Differential Career Processes versus 1965 Success Contingency for Total Sample

1965 Success	Differential Career Process				
	Constant Maturity	Emerging Maturity	Degener-ation	Constant Immaturity	Totals
Successful	10	28	2	2	42
Unsuccessful	6	13	23	13	55
Neutral	2	2	6	4	14
Totals	18	43	31	19	/ 111

$$\chi_6^2 = 35.4, \quad p < .01$$

Table 8.9

Differential Career Processes versus 1965 Success Contingency for Males in Sample

1965 Success	Differential Career Processes: Constant Maturity + Emerging Maturity	Differential Career Processes: Degeneration + Constant Immaturity	Totals
Successful	20	3	23
Unsuccessful and Neutral	9	25	34
Totals	29	28 /	57

$$\chi_1^2 = 20.1, \quad p < .01$$

Table 8.10

Differential Career Processes versus 1965 Success Contingency for Females in Sample

1965 Success	Differential Career Processes: Constant Maturity + Emerging Maturity	Differential Career Processes: Degeneration + Constant Immaturity	Totals
Successful	18	1	19
Unsuccessful and Neutral	14	21	35
Totals	32	22	55

$$x_1^2 = 15.2, \quad p < .01$$

space. If there are differential career processes among adolescents, it seems reasonable that they should be dependent on the self-concept dimensions that define vocational maturity in early adolescence. The authors have no choice but to defy the voices of their data, and to insist that future researches will establish this dependency. This is a case where data have suggested a theory that has attained a life of its own, independent of its origins. There is enough evidence for the theory in this data to warrant additional testing of it on new data.

Is DCP contingent on high school curriculum? The answer is a moderate "yes." Table 8.11 demonstrates that more seniors in the college preparatory curriculum have strong DCP diagnoses than have weak ones, while more senior members of other curricula have weak diagnoses than strong ones. However, there is ample opportunity for a college preparatory student to have an unsatisfactory diagnosis, and for a student in another curriculum to have a satisfactory DCP diagnosis. Table 8.12 reveals that there is also a significant contingency relationship between 1965 Success Rating and Curriculum in senior year in high school, but again with ample opportunities for reversals of trend.

Is DCP contingent on family socio-economic stagus, then? Moderately so, as testified to by Table 8.13. Success Rating in 1965 is also contingent on socio-economic status, as displayed in Table 8.14. These contingencies suggest that non-college preparatory youths may have greater counseling needs in our high schools than do college preparatory youths. Incidentally, the mean Otis I.Q. (1958 data) for the 61 subjects with satisfactory DCP diagnoses is 110.3, while the mean Otis I.Q. for the 50 subjects with unsatisfactory diagnoses is 105.0. The mean Otis

Table 8.11

High School Senior Year Curriculum versus D. C. P. Contingency for Total Sample

High School Curriculum	Differential Career Processes: Constant Maturity + Emerging Maturity	Degeneration + Constant Immaturity	Totals
College	45	11	56
Business	12	22	34
Industrial, General, Dropouts	4	17	21
Totals	61	50 /	111

$x_2^2 = 30.9, \quad p < .01$

Table 8.12

High School Senior Year Curriculum versus 1965 Success Contingency for Total Sample

High School Curriculum	1965 Success Rating: Successful and Neutral	Unsuccessful	Totals
College	39	17	56
Business	9	25	34
Industrial, General, Dropouts	8	13	21
Totals	56	55 /	111

$x_2^2 = 17.4$, $p < .01$

Table 8.13

Socio-Economic Status of Family versus D. C. P.
Contingency for Total Sample

Socio-Economic Status of Family	Differential Career Processes				Totals
	Constant Maturity	+ Emerging Maturity	Degener-ation	+ Constant Immaturity	
Upper and High Middle	28		9		37
Middle Class	17		14		31
Low Middle and Lower	16		27		43
Totals	61		50	/	111

$$\chi_2^2 = 11.9, \quad p < .01$$

Table 8.14

Socio-Economic Status of Family versus 1965 Success Contingency for Total Sample

Socio-Economic Status of Family	1965 Success Rating: Successful and Neutral	Unsuccessful	Totals
Upper and High Middle	29	8	37
Middle Class	15	16	31
Low Middle and Lower	12	31	43
Totals	56	55 /	111

$x_2^2 = 20.4$, $p < .01$

I.Q. (1958 scores) for the 42 subjects rated Successful in 1965 is 112.5, while the mean for 69 subjects rated Unsuccessful is 105.1.

What emerges is a complex view of careers in progress, for which the fundamental element is career aspiration at each of four interviews spaced over seven years. This element is related to actual behaviors, in and out of school, to self-concept imagery, and to ability and family status. The effort to create process variables leads us to focus on transitions in aspirations from one interview to the next, to place value judgments on the qualities of these transitions, and to try to relate evaluations of transitions to other variables. We have been only partially successful in finding such relationships, but the success we have had leaves us persuaded of the desirability of this mode of analysis. The remainder of this chapter is concerned with reporting our efforts to fit formal probability models to our process measures. Again, our successes are modest, but sufficient to encourage further exploration of a new research mode.

PART II

A Stochastic Process Model[1]

In the remainder of this chapter, the authors consider an approach to human development research that represents a methodological innovation for the field. This approach abandons the customary effort to account for an individual's developmental pattern from his known profile of scores on measures of individual differences. The methods of the past have been statistical, with heavy reliance on linear models such as discriminant and multiple correlation analysis (the former has been the workhorse for this monograph). Perhaps the most significant feature of these linear models is that they are compensatory, since they depend on weighted sums in which low performance on one of the predictor variables may be compensated for by high performance or status on another. Another feature of statistical models which we have learned to take for granted is that they represent an "independent variables → dependent variable"paradigm, in which the criterion variable is "explained" by the pattern of its statistical dependency on a set of predictors, usually personality trait measures. The effort is to account for as much of the variance in the criterion as possible from the predictors variance-covariance. You might say that the criterion is explained by a theory of its external relationships. The new model considered here is one that attempts to explain the criterion variable in terms of an inherent internal logic, by suggesting that it follows a probability law that is innate in the process it measures. This kind of stochastic model is applicable only to criterion variables which are

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[1]Mr. Silas Halperin, School of Education, State University of New York at Buffalo, is a co-author of this Part II of Chapter 8.

in fact process measures. Longitudinal development studies have the characteristic that they generate such measures of development over time.

The specific type of stochastic model we have in hand is the Markov chain variety, which is suitable for a discrete series of observations over points in time on a discrete measurement variable, such as membership in one of a set of occupational aspiration groups. Quantitative psychologists concerned with learning experiments, games strategies, policy decisions, and such have been very successful in the fitting of Markov chains to their data, but to the best of our knowledge there have been no efforts to fit such models to developmental sequences such as career patterns. This is unfortunate, because the Markov chain model is a genuine process model, which ought to be capable of representing an on-going life process such as career development. Bartlett has observed that a stochastic model represents "some possible, actual, e.g., physical, process in the real world, that has some random or stochastic element involved in its structure" (Bartlett, 1960, p. 1). What a nice description of careers!

Markov chains are probability models, and cannot be expected to account for all the variance in developmental patterns. They do have the advantage that they propose self-contained systems in which the predictability that is obtained is a resultant of the dynamics of the model itself, rather than being derived from external information about the states of predictor variables. A suitable Markov model can tell us how much of the variance in developmental outcomes can be explained by a theoretical model of the process itself without recourse to functional

or statistical relations with outside variables. Certainly we must anticipate much looser fits of Markov models to natural process variables collected in longitudinal survey studies of human beings "becoming" in their real social habitats than are expected in laboratory learning and gaiming experiments, which are contrived to produce data likely to follow Markov laws. The authors contend that even loose fits of theory to real-life data can be illuminating. It is in the spirit of the notion that it behooves students of personality to explore for possible utilities of other modes of analysis of their data than the time-honored trait-statistical mode that the authors have been attracted to Markov chains.

The Markov chain model restricts the criterion variable to a discrete, nominal or ordinal variable with as few states as possible, and observes the paths taken by subjects through the states of the variable over temporally separated stages, to see if there is a probability law inherent in the process. By "process" we mean the tree structure of possible paths through the states over the stages. If there is a law, it could be quite a complex one, but we prefer to try out a very simple model for its very simplicity before we move to more complex forms. When a simple model fits even loosely it is very helpful to conceptualization and manipulation of the variable.

In fitting a Markov chain, the observations for each transition from time j to time $j+1$ are converted from frequencies to proportions by rows in a transition matrix, the rows of which represent the states of the variable at time j and the columns of which represent the states of the variable at time $j+1$. For example, this matrix reports

the transition frequencies (in brackets) and corresponding proportions of college students on an academic probability variable.

		Semester 4	
		Probation	Full Privileges
Semester 3	Probation	.90 (45)	.10 (5)
	Full Privileges	.30 (60)	.70 (140)

Note that the proportions sum to unity across each row. The fact is that 45 of 50 students who were on probation in semester 3 remained on probation in semester 4. This frequency is converted to a proportion of .90. Such a transition table would be arranged for each semester-to-semester transition observed. The feature of the Markov chain model is that it assumes a process "with no memory extending before the previous instant" (Bartlett, 1960, p. 12), and that the law governing this instantaneous memory is constant for all instances. That is, the several different observed transition matrices are assumed to differ from a "stationary" transition matrix only by chance, and an estimate of this hypothetical stationary transition matrix is generated (see Anderson and Goodman, 1957, for the method of fitting). From observation matrices for several semester-to-semester stages the following stationary matrix might have been generated:

	Probation	Full Privileges
Probation	.85	.15
Full Privileges	.25	.75

If so, the interpretation would be that the probability of going from probation to full privileges in a one-semester transition is .15, and the probability of going from full privileges to probation in one

semester is .25.

Analysis of a stationary matrix after it is fitted can yield many interesting results (see Kemeny and Snell, 1960 for an introduction to Markov chains), some of which have promising psychological interpretations that have been projected elsewhere (Lohnes, 1965). Examples of such results are described in this chapter for the discrete process variables that have been presented in Tables 8.3 and 8.5. We have succeeded in fitting Markov chains to six data sets, involving four variables, from the Career Development Study. Two other data sets that were successfully fitted are not reported, and ten data sets that could not be fitted are not reported. However, only four variables were involved in the 18 data sets attempted, and we had success with every variable on at least one data set. The four variables are 1) transitional coping behaviors, 2) educational aspiration, 3) Roe level of occupational aspiration, and 4) Roe group of occupational aspiration. The Markov variable in each case represents a reduction of the original variable. The actual motive was that the small number of subjects in the study, particularly when the sexes are separated, drove us to a small number of levels on the Markov variables, but it seems to us to be true that Markov models are more attractive when they involve only a few levels on the variable. By the way, when these variables were employed as criterion variables for discriminant analyses, with the eight RVP scales as predictors, the levels were reduced in the same fashion for the same reasons.

Twelve of the eighteen data sets mentioned came about by treating each variable for three transitions (1958-61, 1961-63, 1963-

65) for total sample and for each sex separately. The results were that coping behaviors were fitted successfully for total sample and for each sex, although we report only for total sample; educational aspirations were fitted only for girls; Roe level of occupational aspiration could not be fitted for total sample, but was fitted for each sex separately; and Roe group of occupational aspiration also failed to fit for total sample but did fit for boys and girls separately. The remaining six data sets were created by coding a fourth transition for three of the variables (educational aspiration; Roe level; Roe group) by treating the observed relationship of the 1965 actual situation of the subject to his aspirations as a transition. This was probably not a sound idea, and it did not pay off.

Table 8.15 is for a Markov chain analysis of transitional coping behaviors. The question we want to consider is whether this is a useful way of extracting and organizing the information from the data. Looking at the Markov variable itself, if you are not familiar with Super's concept of coping behaviors, permit us to suggest that a subject who is placed in Group 1 has been judged to be in an unhealthy mental state with respect to his cognizing of a career plan, while the subject who is placed in Group 2 has been judged to be in a healthy mental state. There is a human value judgment involved in these placements. They may be viewed as diagnostic categories. Gribbons and Lohnes believe that the subjects in Group 1 at any time have greater need for counseling than do those in Group 2, and certainly the presentation problems from Group 1 would be more challenging.

Table 8.15

Markov Chain Analysis of Transitional Coping Behaviors

Total Sample, N = 110

Markov	Coping Behaviors
Group 1	floundering; stagnation
Group 2	trial; instrumentation; establishment

Initial Probabilities

Group 1: .64 Group 2: .36

Transition Matrix 1 (1958-1961)
(frequencies in brackets)

	Group 1	1961	Group 2
Group 1	.63 (44)		.37 (26)
1958			
Group 2	.30 (12)		.70 (28)

Transition Matrix 2 (1961-1963)

	Group 1	1963	Group 2
Group 1	.66 (37)		.34 (19)
1961			
Group 2	.39 (21)		.61 (33)

Transition Matrix 3 (1963-1965)

	Group 1	1965	Group 2
Group 1	.74 (43)		.26 (15)
1963			
Group 2	.37 (19)		.64 (33)

Stationary Transition Matrix

	Group 1	Group 2
Group 1	.674	.326
Group 2	.356	.644

Table 8.15
(Continued)

Stationarity hypothesis $\chi_4^2 = 2.7$, $p \sim .61$

Order zero versus order one $\chi_1^2 = 33.$, $p < .001$

Order one versus order two $\chi_2^2 = 1.8$, $p \sim .41$

An example may clarify this variable. One boy said in the eighth grade that he wanted to be a professional ball player, and he stayed with this plan in the tenth grade. For the 1958-61 transition his coping rating was "establishment," placing him in Group 2. Then, in his senior year he said he wanted to be an office worker. The context of this plan in the protocol seemed to indicate that he was "floundering," so he was placed in Group 1. Two years out of high school he reported that he wanted to be a truck driver. At that time he was working as a helper in a service station. He still appeared to be floundering, so he was judged into Group 1 again for his 1963-1965 transition. (We have changed the facts slightly to preserve the anonymity of this case.) Here is a boy who had a firm but unrealistic plan in early adolescence, and who was left with ashes when the dream burned out. For this case, perhaps the greatest need for counseling existed exactly when the dream was destroyed.

The initial probabilities tell us that on the first observations in 1958, 64% of the subjects were rated as in unhealthy frames of mind, and only 37% were rated healthy. The similarities among the three transition matrices for actual transitions seem to justify the fitting of a stationary transition matrix as a theory for the data, as does the χ^2 for the stationarity hypothesis. The χ^2 for order zero assures us that this is not a totally random process we are studying, and the χ^2 for order one informs us that it is reasonable to view it as a process with one-step memory.

The interpretation of the stationary transition matrix is that for a person who is rated in Group 1: unhealthy at time k, the

probability is .67 that he will remain in Group 1 at time k+1 (two years later), and the probability is .33 that he will be rated in Group 2: healthy, two years later. These don't seem to be good odds for a person. Also, for a person who is rated healthy at time k, the odds are .64 of his remaining in Group 2 over one time interval, and .36 of his moving to Group 1. What we think this matrix says to counselors is that the appearance of a good mental condition with respect to vocational planning at any point in adolescence is not a guarantee of the continuation of that healthy state, although the odds favor its continuance; and that unhealthy states of vocational planning tend to be stubborn indeed.

The powers of the stationary matrix are quite revealing. The process approaches equilibrium rapidly, and it is an equilibrium in which the expected distribution is almost equal between the two groups; 52 - 48 actually. We take it there is a suggestion here of a process which grinds to unacceptable outcomes if left undisturbed.

Let us sober up a little. Lohnes has said elsewhere (1965) that these models are most likely going to apply over intervals of a few years of development, perhaps over a single stage in the career span. We anticipate the need for different models for different career stages. We don't want to extrapolate our model too far.

The educational aspirations of girls model is informative, we think. The initial probabilities indicate that in the eighth grade 41% of our girls aspired to a college education. The three actual transition matrices reveal quite a bit of jumping around on this variable over the seven years, and the stationary transition matrix summarizes

this mobility by asserting that if a girl aspires to college at time k, the probability is only .67 that she will maintain this aspiration at time $k+1$. As educators, our moral is that we need to be sure that the curriculum programs for these girls provide something besides college preparation for the 33% of girls who will elect a college preparatory program but will not persevere in planning for college. The stationary matrix also shows that there is very little movement of girls who are not planning college at time k into college plans at time $k+1$; only 12% make this move. We think that the counselor could use this table to show high school girls who enroll in college preparatory programs that there is some sense in their electing vocational and home economics units as well as preparatory units.

The powers of the stationary transition matrix are once again crucial to our insights into the nature of the process. We observe that this chain approaches equilibrium very slowly, and will not achieve equilibrium in the four transitions over nine years for which the model has applicability. What commands attention is that by senior year only half of the girls who planned college in the eighth grade will retain those plans, by two years out of high school only 39% of those eighth graders who planned college will retain those plans, and extrapolating to four years out of high school, the model predicts that only 34% of those who planned college in the eighth grade will have retained those plans. To the extent that the model is trustworthy, it has a lot to say to high school girls and those who counsel them.

Table 8.16

Powers of Stationary Matrix for Coping Behaviors, Total Sample

Second Power (1958-1963 Transitions)			
1958	Group 1	.570	.430
	Group 2	.469	.531
Third Power (1958-1965 Transitions)			
1958	Group 1	.537	.463
	Group 2	.505	.495
Third Power (1958-1967 Transitions)			
1958	Group 1	.527	.473
	Group 2	.517	.483
Limiting Matrix (Equilibrium at 6th Power)			
	Group 1	.522	.478
	Group 2	.522	.478

Powers of Stationary Matrix for Girls Educational Aspirations

Second Power (1958-1963 Transitions)			
1958	Group 1	.493	.508
	Group 2	.188	.812
Third Power (1958-1965 Transitions)			
1958	Group 1	.393	.607
	Group 2	.225	.775
Fourth Power (1958-1967 Transitions)			
1958	Group 1	.338	.662
	Group 2	.245	.755

Table 8.16
(Continued)

Limiting Matrix (Equilibrium at 13th Power)

Group 1	.270	.730
Group 2	.270	.730

Table 8.17

Markov Chain Analysis of Educational Aspirations

Girls, N = 50

Markov	Educational Aspirations
Group 1	graduate school; four year college
Group 2	junior college; nursing; vocational school; high school only; some high school

Initial Probabilities

Group 1: .41 Group 2: .59

Transition Matrix 1 (1958-1961)
(frequencies in brackets)

	Group 1	1961	Group 2
Group 1	.59 (13)		.41 (9)
1958			
Group 2	.16 (5)		.84 (27)

Transition Matrix 2 (1961-1963)

	Group 1	1963	Group 2
Group 1	.67 (12)		.33 (6)
1961			
Group 2	.08 (3)		.92 (33)

Transition Matrix 3 (1963-1965)

	Group 1	1965	Group 2
Group 1	.80 (12)		.20 (3)
1963			
Group 2	.13 (5)		.87 (34)

Stationary Transition Matrix

	Group 1	Group 2
Group 1	.673	.327
Group 2	.121	.879

Table 8.17
(Continued)

Stationarity hypothesis $\chi_4^2 = 2.6$, $p \sim .62$

Order zero versus order one $\chi_1^2 = 52.$, $p < .001$

Order one versus order two $\chi_2^2 = .70$, $p \sim .71$

Turning to the Markov chain analysis of Roe level of occupational aspirations for boys, we observe in the initial probabilities a tremendous overaspiration in the eighth grade. The actual transitions and the stationary theory matrix inform us that this excessive election of Roe level one and level two occupations persists even beyond high school. The next transition matrix in this series, which will become available after we interview these boys next year, should tell a different story. The powers of the theory matrix indicate that this is another process which goes to equilibrium very slowly. The fourth power of the theory matrix predicts that next year we will find that 54% of the boys who elected Group 1 occupations in 1958 will still be electing Group 1 occupations, and also predicts that next year 46% of the boys who elected Group 2 occupations in 1958 will be electing Group 1 occupations. We do not think these predictions will be borned out in the facts. Instead, we think we will have here an example of a process model which applies reasonably well to middle adolescence of boys, but which cannot survive the staggering impact of social and economic reality (and educational reality, since colleges and graduate schools will transmit the message to many of these boys) which impinges on boys three or four years after they leave high school.

The Markov chain for Roe level of occupational aspirations of girls is a little different from that for boys. A smaller percentage of girls aspire to Group 1 occupations. The stationary matrix shows that few girls will move from Group 2 to Group 1 occupations in one step, which is borne out by the actual transition matrices, especially after the first transition. The powers of the theory matrix indicate

Table 8.18

Markov Chain Analysis of Roe Level of Occupational Aspirations

Boys, N = 56

Markov	(Modified) Roe Level of Occupational Aspirations
Group 1	1, doctors, high managerial; 2, professionals, managerial
Group 2	3, semi-professionals, low managerial; 4, skilled workers; 5, semi-skilled; 6, unskilled; 7, no aspiration

Initial Probabilities

Group 1: .57 Group 2: .43

Transition Matrix 1 (1958-1961)

	Group 1	1961	Group 2
Group 1	.75 (24)		.25 (8)
1958			
Group 2	.29 (7)		.71 (17)

Transition Matrix 2 (1961-1963)

	Group 1	1963	Group 2
Group 1	.71 (22)		.29 (9)
1961			
Group 2	.16 (4)		.84 (21)

Transition Matrix 3 (1963-1965)

	Group 1	1965	Group 2
Group 1	.88 (23)		.12 (3)
1963			
Group 2	.20 (6)		.80 (24)

Stationary Transition Matrix

	Group 1	Group 2
Group 1	.775	.225
Group 2	.215	.785

Table 8.18
(Continued)

Stationarity hypothesis $\chi_4^2 = 4.0$, $p \sim .41$

Order zero versus order one $\chi_1^2 = 53.$, $p < .001$

Order one versus order two $\chi_2^2 = 4.9$, $p < .09$

Table 8.19

Powers of Stationary Matrix for Boys Roe Level of Occup. Aspir.

	Second Power (1958-1963 Transitions)		
1958	Group 1	.649	.351
	Group 2	.335	.665
	Third Power (1958-1965 Transitions)		
1958	Group 1	.578	.422
	Group 2	.403	.597
	Fourth Power (1958-1967 Transitions)		
1958	Group 1	.539	.461
	Group 2	.441	.559
	Limiting Matrix (Equilibrium at 14th Power)		
	Group 1	.489	.511
	Group 2	.489	.511

Powers of Stationary Matrix for Girls Roe Level of Occup. Aspir.

	Second Power (1958-1963 Transitions)		
1958	Group 1	.534	.466
	Group 2	.180	.820
	Third Power (1958-1965 Transitions)		
1958	Group 1	.431	.569
	Group 2	.220	.780
	Fourth Power (1958-1967 Transitions)		
1958	Group 1	.369	.631
	Group 2	.244	.756
	Limiting Matrix (Equilibrium at 14th Power)		
	Group 1	.279	.721
	Group 2	.279	.721

again a very slow movement to equilibrium, but do indicate that as early as two years out of high school only a minority of the girls who elected Group 1 occupations in 1958 will persist in elections at that level.

The two tables on analyses of Roe group of occupational aspiration may be of interest. We will simply note that when there are four levels on the Markov variable rather than two, the chain becomes much more complicated and difficult to develop interpretations for. If the variable itself justifies the effort, fine. We are not sure this one does, actually.

The point on which we want to conclude is that we offer these tables and interpretations as demonstrations of a mode of analysis that we believe has enormous potential in the handling of data from longitudinal studies of human development. No critic can be more aware of the limitations of the data in hand than are Gribbons and Lohnes, who have lived for a number of years in intimate and often bruising contact with those limitations. Nevertheless, we are grateful to our data and the young people who have made it available, because it has made it possible for us to test in a tentative fashion a large number of notions, including those we have displayed here, and it has contributed significantly to our insights into the research problem of career development and into the problems of researching careers. Although we have only cracked the door to the vestibule, the little peak inside we have gained leaves us convinced that stochastic process models can become an important supplement to trait-statistical models in the framing and testing of theories of human development.

Table 8.20

Markov Chain Analysis of Roe Level of Occupational Aspirations

Girls, N = 64

Markov	(Modified) Roe Level of Occupational Aspirations
Group 1	1, doctors, high managerial; 2, professionals, managerial
Group 2	3, semi-professionals, low managerial; 4, skilled workers; 5, semi-skilled; 5, unskilled; 7, no aspiration

Initial Probabilities

Group 1: .43 Group 2: .57

Transition Matrix 1 (1958-1961)

1958 \ 1961	Group 1	Group 2
Group 1	.70 (16)	.30 (7)
Group 2	.23 (7)	.77 (24)

Transition Matrix 2 (1961-1963)

1961 \ 1963	Group 1	Group 2
Group 1	.70 (16)	.30 (7)
Group 2	.10 (3)	.90 (28)

Transition Matrix 3 (1963-1965)

1963 \ 1965	Group 1	Group 2
Group 1	.74 (14)	.26 (5)
Group 2	.03 (1)	.97 (34)

Stationary Transition Matrix

	Group 1	Group 2
Group 1	.708	.292
Group 2	.113	.887

Table 8.20
(Continued)

Stationarity hypothesis $\chi_4^2 = 6.6$, $p \sim .16$

Order zero versus order one $\chi_1^2 = 60.$, $p < .001$

Order one versus order two $\chi_2^2 = 2.1$, $p \sim .35$

Table 8.21

Markov Chain Analysis of Roe Group of Occupational Aspiration

Boys, N = 56

Markov	(Modified) Roe Groups of Occupational Aspirations
Group 1	0, housewife, no aspiration; 1, physical; 9, student
Group 2	2, social and personal service; 7, education and humanities; 8, arts
Group 3	3, business; 4, industry and government
Group 4	5, mathematics, physical science; 6, biological science, medicine

Initial Probabilities

Group 1: .107 Group 2: .089 Group 3: .554 Group 4: .250

Transition Matrix 1 (1958-1961)

	Group 1	Group 2	Group 3	Group 4
Group 1	.167 (1)	.167 (1)	.333 (2)	.333 (2)
Group 2	.000 (0)	.600 (3)	.400 (2)	.000 (0)
Group 3	.000 (0)	.129 (4)	.677 (21)	.194 (6)
Group 4	.071 (1)	.143 (2)	.571 (8)	.214 (3)

Transition Matrix 2 (1961-1963)

	Group 1	Group 2	Group 3	Group 4
Group 1	.000 (0)	.000 (0)	1.00 (2)	.000 (0)
Group 2	.000 (0)	.700 (7)	.200 (2)	.100 (1)
Group 3	.091 (3)	.121 (4)	.667 (22)	.121 (4)
Group 4	.000 (0)	.273 (3)	.364 (4)	.364 (4)

Transition Matrix 3 (1963-1965)

	Group 1	Group 2	Group 3	Group 4
Group 1	.667 (2)	.000 (0)	.333 (1)	.000 (0)
Group 2	.071 (1)	.571 (8)	.357 (5)	.000 (0)
Group 3	.067 (2)	.167 (5)	.667 (20)	.100 (3)
Group 4	.111 (1)	.111 (1)	.333 (3)	.444 (4)

Table 8.21
(Continued)

Stationary Transition Matrix

	Group 1	Group 2	Group 3	Group 4
Group 1	.273	.091	.455	.182
Group 2	.034	.621	.310	.034
Group 3	.053	.138	.670	.138
Group 4	.059	.176	.441	.324

Stationarity $\chi_{24}^2 = 18.$, $p \sim .79$

Order zero $\chi_9^2 = 48.$, $p < .001$

Order one $\chi_{36}^2 = 42.$, $p \sim .23$

Table 8.22

Markov Chain Analysis of Roe Group of Occupational Aspiration

Girls, N = 54

Markov	(Modified) Roe Groups of Occupational Aspirations
Group 1	0, housewife, no aspiration; 1, physical; 9, student
Group 2	2, social and personal service; 7, education and humanities; 8, arts
Group 3	3, business; 4, industry and government
Group 4	5, mathematics, physical science; 6, biological science, medicine

Initial Probabilities

Group 1: .074 Group 2: .426 Group 3: .315 Group 4: .185

Transition Matrix 1 (1958-1961)

	Group 1	Group 2	Group 3	Group 4
Group 1	.500 (2)	.250 (1)	.250 (1)	.000 (0)
Group 2	.130 (3)	.478 (11)	.261 (6)	.130 (3)
Group 3	.118 (2)	.118 (2)	.647 (11)	.118 (2)
Group 4	.100 (1)	.200 (2)	.200 (2)	.500 (5)

Transition Matrix 2 (1961-1963)

	Group 1	Group 2	Group 3	Group 4
Group 1	.000 (0)	.250 (2)	.625 (5)	.125 (1)
Group 2	.000 (0)	.625 (10)	.188 (3)	.188 (3)
Group 3	.250 (5)	.100 (2)	.650 (13)	.000 (0)
Group 4	.100 (1)	.100 (1)	.200 (2)	.600 (6)

Transition Matrix 3 (1963-1965)

	Group 1	Group 2	Group 3	Group 4
Group 1	.667 (4)	.000 (0)	.167 (1)	.167 (1)
Group 2	.333 (5)	.533 (8)	.067 (1)	.067 (1)
Group 3	.391 (9)	.043 (1)	.565 (13)	.000 (0)
Group 4	.000 (0)	.200 (2)	.000 (0)	.800 (8)

Table 8.22
(Continued)

Stationary Transition Matrix

	Group 1	Group 2	Group 3	Group 4
Group 1	.333	.167	.389	.111
Group 2	.148	.537	.185	.130
Group 3	.267	.083	.617	.033
Group 4	.067	.167	.133	.633

Stationarity hypothesis $\chi_{24}^2 = 31.$, $p \sim .15$

Order zero versus order one $\chi_9^2 = 93.$, $p < .001$

Order one versus order two $\chi_{36}^2 = 40.$, $p \sim .30$

CHAPTER NINE

Seven Years of Development of Other Variables

The career development of an individual is determined by a wide variety of forces impinging upon him from the cultural milieu in which he exists as well as those pressures coming from within him. In this chapter we will deal with some of these forces which, we feel, have particularly important implications for the counselor.

For example, verbalized preferences for occupations, which are dominated by one's hierarchy of values, have been studied in relation to (1) intelligence, (2) value shifts over time, (3) values differences due to sex. In addition the fact that career options are increasingly determined by educational choices as age increases prompted study of educational choices in relation to (1) curriculum, (2) intelligence, (3) socio-economic status, (4) parents' education.

Occupational Preferences and Intelligence

The role of intelligence in choosing, entering, and remaining in an occupation has always had an important place in vocational guidance theory and practice. Super has stated, "Intelligence is related to the occupational level aspired to: that is, the brighter the individual, the more likely he is to aspire to higher level occupations, and the duller he is, the more likely he is to be interested in a lower level occupation. Ability seems to find outlets which are appropriate, occupations in which it can be used. Since information...(is) often inadequate, however, some people aspire to inappropriate levels." (Super,

1957).

Ideally a student in stating a vocational preference would take into consideration as much information about himself and the educational and occupational worlds as is available to him. The information would include such important factors as an understanding of his own interests, values, strengths and weaknesses, and an understanding of the educational and vocational worlds and the relationship of these factors to his future occupation. We know, of course, that many students do not behave in this ideal fashion. It has long been accepted by counselors that many youngsters are not "realistic" in their vocational plans and that students' statements about themselves and their futures cannot be accepted at face value.

In this chapter we report on the vocational preferences of the subjects during seven years of the exploratory stage--grades eight through two years out of high school--in career development. Our primary purpose in asking these youngsters to state vocational preferences was to provide one indicator among many measuring Readiness for Vocational Planning. However, it is of interest to guidance counselors to observe what kinds of occupational preferences these students were considering, and the relationships that existed between a student's verbalized preference and his score on an intelligence test.

At each of the four interviews, the student was asked to name three occupational preferences. The occupation which was given as a first preference was then classified according to *The Occupational Outlook Handbook* (1963-64) classification system.

I.Q.'s, as measured by the Otis Mental Ability Test, Beta form, in the eighth grade were classified into three categories. The authors feel that students with I.Q.'s of 111 and over are capable of doing college work and might qualify for occupations at the professional levels, those with I.Q.'s between 105 and 110 could be considered "possible" college caliber, but that students with I.Q.'s below 105 would find it difficult to survive most four-year college programs and therefore would be barred from occupations at the professional levels.

The first impressions one gets from an examination of Table 9.1 is the high percentage of students who stated preference for occupations at the professional, administrative, and related occupational levels, all of which, with very few exceptions, would require at least a college degree. At the eighth grade, for example, 61% (N = 68) of the total sample preferred occupations at the professional level, and at the tenth and twelfth grades slightly over one-half the students were still expressing preference for professionally-oriented occupations, 57% and 55% respectively. At H.S.+2 the percentage actually increased to 58%. This figure is, of course, entirely out of proportion to the number who will be able to enter and remain in occupations of this type. Recent evidence indicates that approximately one-fourth of all workers in 1962 were in professional, administrative and related occupations. (*Occupational Outlook Handbook*, 1963-64) With the ever-increasing use of computers and automation, we may expect a higher percentage of individuals involved in these occupations in the future, but it is problematical that many workers with I.Q.'s of 105 and below would ever qualify. It is therefore very disturbing to note that 25

Table 9.1

Frequencies of Occupational Preferences in Four I.Q. Groups

Occupation	I.Q. 121 plus N=18 Grade 8th	10th	12th	HS+2	I.Q. 111-120 N=22 Grade 8th	10th	12th	HS+2	I.Q. 106-110 N=24 Grade 8th	10th	12th	HS+2	I.Q. 105 and below N=47 Grade 8th	10th	12th	HS+2
Teacher	3	3	4	3	5	3	3	3	3	2	2	2	3	5	5	6
Engineer	4	2	1	2	3	2	2	0	3	1	1	1	3	2	3	2
Nurse	2	1	1	1	1	0	0	0	1	2	0	0	4	5	3	2
Perf. Arts	1	1	1	0	3	1	2	1	0	0	0	0	3	2	4	2
Math Sc.	2	3	2	0	0	2	1	3	0	0	0	0	2	2	2	0
Technical	0	0	0	0	1	1	0	0	1	1	0	0	0	2	0	3
Health-Serv.	0	0	1	2	1	1	0	0	3	0	1	1	4	2	1	0
Other Prof.	1	5	5	4	1	2	2	2	0	2	0	2	2	3	2	4
Bus. Adm.	1	0	0	0	2	0	4	1	1	4	2	4	4	1	5	7
Clerical Sales	0	0	0	0	3	4	6	6	7	6	9	5	8	8	10	4
Service Occ.	0	0	0	0	0	1	1	0	0	2	0	0	2	1	2	3
Skilled Manual	0	1	1	0	0	1	1	2	2	2	4	0	6	8	4	4
Maj. Indust.	1	0	0	0	0	2	0	0	0	0	2	1	2	3	3	3

Table 9.1
(Continued)

Occupation	I.Q. 121 plus N=18 Grade				I.Q. 111-120 N=22 Grade				I.Q. 106-110 N=24 Grade				I.Q. 105 and below N=47 Grade			
	8th	10th	12th	HS+2	8th	10th	12th	HS+2	8th	10th	12th	HS+2	8th	10th	12th	HS+2
Government	0	2	1	1	1	2	0	0	1	2	2	0	1	0	0	0
Misc.	2	0	0	3	1	0	0	1	2	0	1	5	2	2	2	5
D.K.	1	0	1	2	0	0	0	1	0	0	0	3	1	1	1	0
Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

of 47 eighth graders with I.Q.'s of 105 and below preferred occupations in one of the professions. This number remained constant over the five-year period and actually increased by one in H.S.+2. Perhaps the most disconcerting fact to note in this group is that as late as H.S.+2 fifteen of these subjects, not enrolled in four year colleges, continued to state aspirations in the professional category. One hopeful aspect to this picture, however, is that two of the girls are student nurses, one girl is training to be a dental assistant, one girl is a practical nurse, and one of the boys in the military aspires to college after his military obligations are fulfilled.

The most popular single occupation over the seven-year period was teaching with 14, 13, 14, and 14 students stating a preference for teaching at each grade respectively. Two occupations, engineering and nursing, showed a downward trend. Engineering, which competed for most popular with teaching in the eighth grade with 13 preferences showed a 50% drop in the tenth and twelfth grade, and dropped off to five in H.S.+2. The nursing category, which contained eight students in the eighth and tenth grades dropped to four in the twelfth grade and three in H.S.+2.

An analysis of the changes with individual students stating a preference for engineering shows that of the original 13 engineers in grade eight, three consistently preferred engineering over the seven year period (I.Q.'s 120, 121, and 100). The remaining ten students' preferences in H.S.+2 were as follows: Doctor (121), Law (124), Accountant (108), Architect (107), Research Scientist (119), Teacher (108), Physical Education Teacher (102), Factory Worker (111), two

Scientists (115 and 119), and Business (93). Thus, all but one chose occupations within the professional group. Of the eight girls who preferred nursing in grade eight, at H.S.+2 two continued in nursing, three switched their preferences to the clerical area, two to elementary school teaching, and one to being a housewife.

As has been found in other studies (Davis 1962, Holden 1961, Lockwood 1958), the brighter students in this study appeared to make choices which were consistent with their measured intelligence. We should be concerned however with the narrowness of range of their choices as indicated by the preponderence of preferences for engineering and teaching. Perhaps we should ask ourselves if we are failing to acquaint students with the myriad occupations available today and possibly to come in the future. We may pride ourselves that we encourage great freedom of choice in our schools, but true freedom of choice must be based on understanding and acquaintance with the greatest number of possible choices.

While it was apparent that some subjects stated preferences for occupations in general agreement with their measured intelligence, too many subjects stated preferences which appear to be inconsistent with these scores. In the 105 and below groups, for example, six preferred teaching, two engineering, two accounting, and two nursing. Although there is some evidence that these occupations have room for persons in this range of I.Q. score, it is probably more realistic to assume that it will be difficult for these subjects to do successful work at the college level and they may well be barred from the fields of their choice. Thus, while <u>most</u> counseling psychologists would prefer

that students have the widest possible opportunity to be free to make their own decisions, it is still rather shocking to find so many subjects in this limited sample stating preferences at this late date for occupations which may very well be denied them.

It must also be remembered when these data are considered that every student in this sample was involved in a group guidance program (Gribbons 1960) and many had individual guidance as well. We must wonder, therefore, how these results would differ from a truly cross-sectional sample of students, many of whom have had neither group guidance nor individual counseling. With respect to this question, counselors are urged to consider the detailed presentation on plans and aspirations of high school youth contained in Chapter Five of *The American High School Student*, from which the following generalization on occupational preferences has been drawn:

> There is some evidence that high school seniors are unrealistic in their career plans. About 48 per cent of the boys and 40 per cent of the girls planned to enter a profession or technical field; yet Census data show that only about 15 per cent of employed males and 17 per cent of employed females between the ages of 25 and 29 are in professional and technical occupations. (Flanagan, *et al.*, 5-63)

Certainly any member of the low I.Q. group ought to be "red-flagged" and given special attention if it appears that his aspirations exceed his level of measured intelligence. We, of course, do not suggest that any one should decide for him, but it would seem that it is our continual responsibility to help him to become aware of his own strengths and weaknesses and to relate these aspects of his self-concept to his future educational and vocational decisions. Knowing that we were

analyzing verbal report data, we have been constantly alert to the fact that these are mere verbalizations and that perhaps, in a deeper counseling type interview, we might uncover many students who were simply stating a preference that they expected the interviewer to approve. That is, a student may not have told us that he preferred to be a truck driver, as he realized society asks him to consider a "higher," more socially rewarding occupation, such as teaching or engineering. Even if this latter statement were true in an interview type of relationship (although we felt we had an excellent rapport), the counselor would admit that this type of defense would appear in a counseling relationship. Far from the counselor's accepting the students' preferences at face value, he should explore with each student the reasoning behind his preference: whether the student is taking relevant factors about himself and the educational or vocational factors into consideration when he states his preferences. At the same time, these verbalized preferences (whether real or not) should not be taken lightly as they are all vocationally-oriented decisions, each one over a period of time being taken on as part of his existing self-concept. Super has made the point that "occupational choices always reflect compromises between preferences and expectations. (Super, 1957, p. 286) If, however, the discrepancy between preference and expectation is too wide, it is bound to lead to frustration; and this may create problems other than the original vocationally-oriented one.

It will be interesting as we follow these youngsters for the next six years to note which of them actually enter an occupation which was stated as a preference early in their career development.

Shifts in Adolescents' Vocational Values

Career psychology has attended closely to the emerging vocational interests and aspirations of youth, but little is known about the reasons for the preference patterns which have been described. It has been suggested repeatedly that family pressure shapes the occupational concepts of youth (e.g. Tiedeman and O'Hara, 1963, p. 83), but the available empirical evidence fails to support this view (Brunken and Crites, 1964). It seems more reasonable to emphasize, as Super has (e.g. Super, *et al.*, 1963), that a system of self concepts provides the matrix for specific occupational concepts, censoring and moulding them to a comfortable fit in the matrix, and that the self-concept system itself is a product of a vast congerie of determinants. In this melange of causes, family-related variables contribute to the fomentation of self concepts, but so do neighborhood and community and regional influences, educational and religious factors, mass media exposures, friendships, etc. Taking the system of self concepts as the immediate control over occupational preferences, then, it seems likely that some hierarchy of values embedded in the system dominates the preference-building process. One career psychologist has expressed this hypothesis as follows:

> If there is a single synthesizing element that orders, arranges, and unifies such interactions, that ties together an individual's perceptions of cultural promptings, motivating needs, mediating symbols, differentiating characteristics, and sense of resolution, that relates perception to self-concepts, and that accounts more directly for a particular decision or for a mode of choosing, it is here suggested that that element is the individual's value system. (Katz, 1963, p. 16).

We set out therefore to determine, (a) if there is an important shift in the typal hierarchy of vocational values over seven years from early adolescence to early adulthood, and (b) if there is an important difference between the developed typal hierarchy of vocational values for boys and that for girls.

Before attempting to answer these questions from the data, an account of the interview questions which elicited the responses from which the values of the subjects were judged and ranked is in order. Precisely the same interview form was employed in 1958 and in 1961. Of its 43 questions, the following provided the stimuli for expression of values:

1. What made you decide to take X curriculum?
2. What made you decided not to take Y or Z curriculum?
3. Is there any advantage to taking the college curriculum?
4. Why would you like to become an X (occupation)?
5. What particular interests would X occupation satisfy?
6. What interests do you have that will not be satisfied by X?
7. As you know, things that are important to us are called values; tell me about some of your values.
8. What values of yours would working as an X satisfy?
9. What values of yours would not be satisfied in your occupation as an X?
10. Which of your values will conflict with one another in your choice of an occupation?

The twelfth grade interview was conducted on the basis of a somewhat different set of questions, from among which the following served to elicit vocational values responses:

1. What is the most important factor to consider in making an occupational choice?
2. Why do you consider this factor important?
3. In the eighth grade you were considering the possibility of becoming an X, and in the 10th grade an X', and now you plan to be an X''. Will you tell me what has strengthened this decision (or what has caused you to change your mind)?

4. Do you feel that the occupation you will enter is a matter of chance or choice? Can you tell me why?
5. What would you like to get out of life? What do you think would make you happy and satisfied?
6. What would you like to get out of work?
7. Can you tell me something of how you feel about going to work?
8. When you think about work, is there anything you feel to be especially disagreeable about it?

The questions in the High School plus 2 interview varied markedly from those in the eighth and tenth grades and were somewhat more similar to those in the twelfth grade interview. Evoking the expression of vocational values were the following questions:

1. How satisfied are you with your life during the past two years? Why?
2. What are your hopes for the future?
3. If you could go back what would you do differently?
4. What do you hope to get out of life ultimately? (That is, when you look into the future what do you want to achieve for yourself and your family?)

Responses classified as values seemed to provide broad guideposts to action or entailed a commitment to long-range goals. It was found that twelve general categories accommodated the responses tallied as value indicators, as follow, with some examples of indicators:

Advancement: opportunity to get ahead; good future in it; can become a manager; can work from bottom up
Demand: good job for later on; it's in demand; teachers are needed
Geographic Location, Travel: like to fly; able to travel; learning from travel; raises transportation problems
Interest: like to work with my hands; really enjoy it
Marriage and Family: get married eventually; be happy with husband and children; want a nice home and kids
Social Service: help others; to further society; giving something to humanity; making people happy; like to help children
Personal Contact: chance to meet new friends; like to meet people; working with others; get to know people better
Preparation Ability: where abilities lie; what I'm good at; suited to it
Prestige: people look up to you; earn recognition; respectability

Salary: earn enough to support family; good income; bank account
Satisfaction: happy at work; fulfill myself; doing something worthwhile
Personal Goals: improve self; get to know myself better

Typal value hierarchies were created for each age and sex by ranking the twelve values according to the number of subjects mentioning each. The authors are aware that this procedure involves the popularity of a value category rather than the intensity with which it is employed by those who use it. Table 9.2 reports the resulting ranking of the values for each age and sex, and the frequencies on which the rankings are based. It should be noted that some values were employed by almost all the subjects (maximum possible frequency for any age-sex combination is 55), and others were very seldom employed. Evaluation of these data must take into consideration the fact that the relative scarcity of questions which would serve as value indicators in the High School plus 2 interview resulted in a decrease in the total frequency of responses. While changes in hierarchical rank are paralleled rather closely by corresponding changes in frequency in the first three interviews, this is less characteristic of the final protocol. Here, it will be noted, an increase in rank is sometimes accompanied by a decrease in frequency. This discrepancy should be kept in mind since, in the following section, shifts in typal hierarchies are based on changes in rank.

Time Shifts in the Typal Hierarchies

Satisfaction and Interest were far and away the most popular types of values put forward in the eighth grade, and remained so for both sexes in the two succeeding interviews, decreasing only slightly two

Table 9.2

Typal Hierarchies of Vocational Values for Each Sex and Age

Values	8th Grade				10th Grade				12th Grade				H.S. + 2			
	(57)Girls		Boys(54)		(57)Girls		Boys(54)		(57)Girls		Boys(54)		(57)Girls		Boys(54)	
	rank	f	rank	f	rank	f	rank	f	rank	f	rank	f	rank	f	rank	f
Satisfaction	1	48	1	47	2	50	1	51	1	51	2	50	2	15	2	27
Interest	2	47	2	44	1	51	2	47	2	49	1	51	3	8	4	13
Marriage and Family	7.5	9	11	4	7	14	12	4	3	30	4	22	1	41	1	32
Personal Contact	3.5	24	6	11	3	35	5	16	4	25	6.5	14	4.5	6	6	8
Social Service	3.5	24	5	12	4	26	8	13	5	23	8	10	6	3	7	6
Preparation, Ability	9	5	7.5	10	9	7	6	16	6	15	6.5	14	11	0	10	3
Advancement	12	0	10	7	12	4	11	7	7	14	9	7	8.5	2	5	9
Salary	11	3	3	19	9	7	3	25	8	13	3	41	11	0	3	17
Personal Goals	5	14	7.5	10	6	13	4	20	9.5	8	10	6	4.5	6	8.5	4
Demand	10	4	12	3	11	6	10	9	9.5	8	11	4	11	0	12	1
Location, Travel	6	12	9	8	5	15	9	12	11.5	3	12	2	8.5	2	11	2
Prestige	7.5	9	4	13	9	7	7	15	11.5	3	5	16	9	1	8.5	4

years out of high school (Table 9.2). So heavily saturated are these two categories that the authors wish they knew how to break them down into smaller units, but no workable scheme has suggested itself. Our generalization is that the vocational values which were uppermost in the thoughts of our subjects early in adolescence, remained uppermost throughout the seven year period. Marriage and family is always employed by more girls than boys, and becomes consistently more popular with both sexes as they advance in years finally ascending to the summit of the hierarchical ladder. The boys are persistently interested in salary and prestige; the girls are not. The girls are persistently interested in personal contact and social service; the boys less. There is a decreasing concern with personal goals and geographic location, travel and a corresponding increase in concern with preparation, ability and advancement, on the part of both sexes, throughout the twelfth grade. However, the data for High School plus two years after indicates an increase in the ranking of geographic location and travel with both sexes and a marked increase in that of preparation and ability. Concerning the latter, this may possibly be accounted for by the lack of a question in the High School plus 2 interview which would be apt to elicit a value response in this direction. Also, the importance assigned to personal goals increased considerably while that of advancement decreased slightly among the girls at that time. There was, however, a definite increased concern with advancement among the boys. (This seems especially noteworthy since here there is an increase in frequency as well as in rank, something which occurs only in one other category: marriage and family, in the final protocol.) There is little or no con-

cern with demand at any time. Apart from the sex differences to be discussed below, perhaps the most noticeable trend is from "idealism" in the eighth grade (social service, personal goals, location and travel) to "realism" in the twelfth (marriage and family, preparation and ability, advancement) which is probably to be applauded. This evidence for the emergence of more mature values somewhat contradicts the finding of Dipboye and Anderson that "little change takes place in the student's occupational values) during his high school career" (1959, p. 124). However, as noted, there are important consistencies over the seven years of our data also.

Sex Differences in Developed Typal Hierarchies

Super included only boys in his Career Pattern Study (1957), and it has been suggested by friends that the sex mix in the small sample of this research may have been rash. Consideration of the developed typal hierarchies of vocational values for the two sexes does reveal an important contrast. Where the boys have given high rank to salary and prestige values, the girls have given high rank to personal contact and social service values. This finding lends some support to the theoretical notion of Harrod (1960) that girls are people oriented, in that they like to meet people and help them, whereas boys are career, or extrinsic reward, oriented, in that they are most concerned with salary, security, and prestige.

The comparison of the final hierarchies for the two sexes, however, is dominated by the similarities rather than by the differences. There is overwhelming concern with satisfaction to be found in vocation

and the opportunity to satisfy interest particularly. Both groups have arrived at very high concern for marriage and family. In line with the result of Astin and Nichols that "men are more likely to give a response with vocational content" (1964, p. 56), it is true that our girls spoke of marriage in terms of husband and children, while our boys spoke of it in terms of providing basic necessities and some luxuries for the family. The two hierarchies are also in near agreement on the position given to preparation and ability, and the low positions given demand and location and travel.

It has been said that "students make choices in terms of the kind of person they believe themselves to be" (Holland, 1964, p. 97). We have argued that the value categories favored by adolescents in their discussion of vocation issues reveal aspects of their self-concepts systems which are crucial in determining occupational preferences. Enough early maturity and constancy in the typical hierarchies of vocation values over seven years of growth has been shown to warrant challenging Ginzberg's theoretical position that values do not play an important part in early vocational development. Even the eighth grade value statements of our sample of youth are relatively free of "fantasy" elements, although we do discern a shift from "idealism" to "realism" over the seven years. Our interpretation of our data is that the constancy it shows bespeaks a maturity of self concepts early in the eighth grade sufficient to justify close attention from counselors at that time, while the shifts it shows testify to a healthy maturation during adolescence.

Although theoreticians emphasize that career development differs for girls and boys (e.g. Mathews, 1963), and we have noted a bit of a people oriented (girls) versus career oriented (boys) differentiation in our developed hierarchies, it is our contention that the similarities in our data outweigh the differences, and that our boys and girls appear to be rather alike in their employment of vocational value categories.

It has been shown that school counselors can interfere successfully in the vocational development process (Gribbons, 1960; Shimberg, 1962). It would seem that counselors should assist young people at an early age to an increased awareness of personal value hierarchies, to the improvement of their values, and to the integrating of their values and their aspirations and plans.

Educational Aspirations

Educational aspirations are among the most vital aspects of early career development because curriculum choices prefigure a youngster's vocational future to a considerable degree. In this section we will examine the relationships between educational aspirations and the following variables:

1. Type of curriculum
2. Intelligence
3. Socio-economic level
4. Mother and father's attained education

Table 9.3

Educational Aspirations - 8th, 10th, 12th Grade Frequencies

	8th Grade			10th Grade			12th Grade			H.S. + 2		
Aspiration	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
College	42	22	64	34	18	52	31	15	46	33	17	50
3 years	1	6	7	5	6	11	1	4	5	5	1	6
2 years	6	12	18	10	22	32	12	15	27	10	15	25
High School or less	8	14	22	8	8	16	13	20	33	9	21	30

Table 9.3 indicates that in the eighth grade far more students (58%) verbalized a desire to go to college than were likely to enter and remain in college. It is also clear that the percentage of boys far outnumbered the percentage of girls, 75% to 41%. There was a definite downward trend for the total group over the years, indicating that social forces and reality were taking their toll. By the terminal twelfth grade, for example, eleven boys and seven girls had lowered their aspirations. However, it should be noted that there was an increase from grade 12 to H.S. + 2 of four subjects aspiring to go to college, while there was a decrease of one and two respectively in those aspiring to two and three years of post-high school education.

As will be shown later, only 29 students were enrolled in four year colleges two years after high school graduation. Of the remaining 21 who aspired to college in H.S. + 2, four were in the military and expressed strong desires for further education, two were still in high school and were good possibilities for college, four were student nurses, one was a technical school student, and one was attending a three-year school of specialization. Thus, of the 21 subjects who aspired to college but were not enrolled in four year colleges, thirteen were either good possibilities or were in two of three year programs, indicating that most of the subjects' educational aspirations could be considered reasonably realistic.

Curriculum

An examination of Table 9.4 indicates that of those eighth graders planning to enroll in college curriculum, 37 of 38 boys and 19

Table 9.4

Educational Aspirations and Curriculum Elections
Frequencies for Boys (B) and Girls (G)

Curriculum	Aspiration: 8th Grade								Aspiration: 10th Grade							
	Coll.		3 yrs.		2 yrs.		H.S.		Coll.		3 yrs.		2 yrs.		H.S.	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
College	37	19	1	4	0	5	0	4	30	16	4	4	1	6	0	0
Business	1	1	0	0	5	7	3	8	1	3	0	1	2	14	2	7
Ind. Arts	0	0	0	1	1	0	3	2	3	0	1	0	7	2	5	0
Don't Know	4	2	0	1	0	0	1	0								

Curriculum	Aspiration: 12th Grade								Aspiration: H.S. + 2							
	Coll.		3 yrs.		2 yrs.		H.S.		Coll.		3 yrs.		2 yrs.		H.S.	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
College	26	14	0	4	6	3	2	1	27	16	3	0	2	5	2	1
Business	1	1	0	0	2	11	3	16	1	1	0	1	4	8	1	18
Ind. Arts	4	0	1	0	4	1	5	1	5	0	2	0	4	2	3	0

of 32 girls aspired to college. One boy and one girl, both in the business curriculum, also aspired to college. A steady decrease in college aspiration of the college preparatory group was noted so that by the twelfth grade the number was reduced from 37 boys and 19 girls to 26 boys and 14 girls, while the number in the business curriculum aspiring to college remained constant.

At H.S. + 2, 18 of the 37 college curriculum boys who aspired to college in the eighth grade actually were enrolled in colleges, one was attending a two-year technical school, two still in high school were planning on entering college, and four of the five in the military expressed desires to continue their educations. Thus 68% of this original college aspiring group of boys seem to have reached their goals or are continuing to aim for them.

Of the nineteen college preparatory girls aspiring to college in grade eight, nine were enrolled in four year colleges, two were student nurses, four were housewives, four were clerks, and one was a practical nurse at H.S. + 2. This would indicate a rather smaller percentage of girls--58%--following the plans they tentatively made in grade eight.

Although the N is extremely small, the I.A.-Gen. group showed a sharp increase in college aspirations over the high school years; from none of seven in the eighth grade to four of sixteen in the twelfth grade. Even more surprising to those who recognize the difficulty of achieving one's raised educational aspirations, in H.S. + 2, five of these subjects continued to aspire to college education. In fact, two were attending four year colleges, two in the military expressed high

motivations and plans to attend college, and one was in high school and probably will attend some school of higher education.

An interesting fact is noted when one breaks down the group changed into individual changes. As noted in Table 9.2, there was a total increase of four aspirers to college from grade 12 to H.S. + 2, but actually there were 22 changes; nine subjects (6 boys, 3 girls) lowered their aspirations--seven of these from college to secretarial and technical schools--and 13 subjects (8 boys, 5 girls) raised their sights--nine of these moving up from secretarial-technical school to college aspirations. Therefore, it is interesting to speculate on the conslusions one might reach if data were available only for the high school years or if one dealt only with cross-sectional data.

Intelligence and Educational Aspirations

When the relationship between I.Q. and level of aspiration is studied over the seven year period, one should note that both sexes in the 121 plus group demonstrated considerable consistency in their aspirations. The number aspiring to college in the 111-120 group decreased from the eighth to the twelfth grade, but rose slightly in H.S. + 2. Again there was practically no difference between the sexes. In the 106-110 group, however, boys accounted for three of the four losses in college aspirations in the seven year period. The 101-105 group showed little fluctuation with the exception of a temporary change in grade 12. In the 100 and below group, it is of interest to note the number aspiring to college decreased from 12 to 6, but even as late as spring of the twelfth grade, seven of 12 boys in this group

Table 9.5

Educational Aspirations and IQ Group Frequencies

IQ Range	Ed. Plans	8th Grade		10th Grade		12th Grade		H.S. + 2	
		BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
100 and Below	College	7	6	7	3	7	1	4	2
	2-3 Years	3	2	3	6	1	5	6	4
	No Plans	4	3	4	2	6	5	4	4
101-105	College	8	2	7	2	5	3	8	3
	2-3 Years	2	5	4	6	6	3	2	2
	No Plans	2	3	1	2	1	4	2	5
106-110	College	10	2	6	1	6	1	7	1
	2-3 Years	1	7	4	10	2	3	4	4
	No Plans	1	3	2	1	4	8	1	7
111-120	College	9	7	7	5	6	3	7	5
	2-3 Years	1	1	2	5	3	7	3	4
	No Plans	0	4	1	2	1	2	0	3
121 Plus	College	8	5	7	7	7	7	7	6
	2-3 Years	0	3	2	1	1	1	0	1
	No Plans	1	1	0	1	1	1	2	2

still aspired to college! At H.S. + 2, two of these boys were students in technical school, one was unemployed, and the remainder were employed as clerks or involved in general factory work.

Table 9.6

12th Grade College Aspirers Actually Enrolled in Colleges at H.S. + 2 (Frequencies)

IQ	Enrolled			Not Enrolled		
	Boys	Girls	Total	Boys	Girls	Total
100 and Below	1	1	2	6	0	6
101-105	3	0	3	2	3	5
106-110	5	0	5	1	1	2
111-120	5	3	8	1	0	1
121 Plus	6	5	11	1	2	3
Total	20	9	29	11	6	17

Table 9.6 shows a rather disturbing fact when we consider students with I.Q.'s of 111+ to be potential college candidates. Thirty-four of 40 of this group expressed college aspirations in grade 8, but at H.S. + 2, only 19 actually were enrolled in four-year colleges. The disturbing factor in this attrition is the preponderence of losses in the lower socio-economic groups. Ten of 12 in Level 1 and 2 (high s-e status) were enrolled in college and one girl was a student nurse, but only 2 of 10 in Levels 5 and 6 were. It is possible that lower aspirations might result from more realistic appraisal of one's abilities, but they might also result in some cases from a failure of the family, school,

or society to encourage some youngsters to work up to their full potential.

In what might be called, from a prediction standpoint, a borderline I.Q. group, 106-110, it is noteworthy that five boys were enrolled at colleges and one boy and one girl were not. Of these two, the girl was going to a school of dental hygiene and the boy, who was in the military, definitely planned on college after his service requirements were fulfilled. The 101-105 group had three boys attending college and two boys and three girls were not. In the 100 and below I.Q. group, one boy and one girl were enrolled and six boys were not. Of these six boys, one was attending a two-year technical institute.

Although the data are not shown in tabular form, it is interesting that the average I.Q. for college aspirations was 111 in the 12th grade; those who aspired to three years of training, 107.6; two year institutes, 107.7; one year, 105; and those having no plans for further education, 104. The average I.Q. of those actually enrolled in four year colleges at H.S. + 2 was 114.8.

Socio-Economic Level and Aspirations

It will be recalled that socio-economic status, rated by Hamburger's revision of Warner's scale, included all major occupational groups among the parents of students and there was a tendency for the occupations to fall at the middle of the scale.

An examination of Table 9.7 shows that 18 of 23 boys and girls in Levels 1 and 2 (indicating high socio-economic level) planned in the eighth grade to go to college, and this number was unchanged at

Table 9.7

Socio-Economic Level and Educational Aspirations (Frequencies)

S-E Level	8th Grade								10th Grade							
	Coll.		3 yrs.		2 yrs.		No Plans		Coll.		3 yrs.		2 yrs.		No Plans	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
1	9	3	0	1	0	0	0	1	7	2	2	1	0	2	0	0
2	4	2	0	1	1	1	0	0	4	2	0	1	0	1	1	0
3	3	6	0	1	1	2	0	1	3	4	0	2	1	3	0	1
4	16	5	0	2	2	2	2	2	14	4	1	0	4	5	1	2
5	6	3	1	0	1	4	2	3	4	3	2	1	4	4	0	2
6	4	3	0	1	1	3	3	6	2	2	0	1	1	7	5	3
7	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1	0

S-E Level	12th Grade								H.S. + 2							
	Coll.		3 yrs.		2 yrs.		No Plans		Coll.		3 yrs.		2 yrs.		No Plans	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
1	7	3	0	0	1	2	1	0	8	4	0	0	0	1	1	0
2	3	1	0	2	1	1	1	0	4	2	0	0	1	1	0	1
3	2	4	0	0	1	4	1	2	3	5	0	0	0	1	1	4
4	12	3	1	2	4	1	3	5	12	4	2	1	4	3	2	3
5	5	2	0	0	3	4	2	4	4	1	2	0	3	7	1	2
6	2	2	0	0	2	3	4	8	2	1	1	0	2	2	3	10
7	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1

H.S. + 2. In Levels 3 and 4, which are close to what Warner called middle class, 6 students (20%) lowered their aspirations from grade 8 to H.S. + 2 while 8 of 16 (50%) of subjects from Levels 5 and 6 lowered their aspirations.

Father's and Mother's Educational Levels

When one examines Table 9.8 he is impressed with the fact that only one eighth grade boy and five eighth grade girls aspired to educational levels below that of their fathers. The number in the "below" categories increased by one in the tenth grade, by four in the twelfth grade, but was approximately the same in H.S. + 2.

A similar trend is noted when student aspirations are compared with mother's educational level.

The "same level" category had about the same N for father's and mother's educational level throughout the high school years, but shows a rather interesting change over the seven year period, with the number of boys decreasing while the number of girls increased. It should be recognized that in most cases of "same level" aspirations, the parents had achieved at least a college education, e.g. 9 of 11 fathers of 8th grade "same level" boys had college degrees, so that most of these boys did aspire to higher education and apparently set higher goals as they progressed through school.

At H.S. + 2 only 3 boys and 4 girls aspired to educational levels lower than their fathers, and 3 boys and 3 girls aspired to levels lower than their mother's so it is clear that the majority of the subjects were not willing to settle for less education than their

Table 9.8

Educational Plans Compared to Parents' Educational Level
(Frequencies)

Father's Education

	8th Grade		10th Grade		12th Grade		H.S. + 2	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Same Level	11	10	13	7	12	11	7	16
1 Level Higher	7	10	6	12	6	12	9	12
2 Levels Higher	12	10	14	13	13	12	11	9
3 Levels Higher	12	13	12	10	13	11	9	12
More than 3 Levels Higher	13	6	10	6	7	2	17	1
1 Level Lower	1	4	1	3	3	2	0	2
2 Levels Lower	0	1	0	3	1	4	2	1
3 or more Levels Lower	0	0	0	0	1	0	1	1

Mother's Education

	8th Grade		10th Grade		12th Grade		H.S. + 2	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Same Level	10	11	12	11	9	15	5	15
1 Level Higher	9	9	5	13	13	10	13	7
2 Levels Higher	8	9	12	10	9	9	5	9
3 Levels Higher	19	15	15	14	14	17	17	9
More than 3 Levels Higher	9	7	10	5	6	0	13	11
1 Level Lower	1	3	2	0	3	3	2	3
2 Levels Lower	0	0	0	1	2	0	1	0
3 or more Levels Lower	0	0	0	0	0	0	0	0

parents had and most of them were looking forward to more than their parents.

If a student wants to go to college it would seem he must either be forced to think about the possibility by his parents or some other agent of society, decide by himself, or haphazardly drift into it by choosing the correct curriculum. In the eighth grade 70 of 111 (63%) planned to enter the college curriculum and 64 of the 70 indicated a preference for college. Of this group, 34 had I.Q.'s of 111+ and might be considered to be aspiring to realistic goals. One must be disturbed, however, to realize that at H.S. + 2 only 19 of these 34 were attending college and the attrition could be accounted for largely in terms of socio-economic level, with almost all of those in the higher levels pursuing higher education, while the percentage decreased radically as the socio-economic level decreased. Although interdependencies of RVP scales and family-related variables were not found, these findings lend definite support to the weight given by Tiedeman and O'Hara to family variables in the development of careers. It would seem that the schools must play a larger part in overcoming the apparent lack of higher aspirations in the children of lower socio-economic parents so that <u>all</u> students may work up to their full potential.

It was encouraging to note that most students contemplating higher education had chosen the college curriculum, and that some who did not have college aspirations had also chosen this course. These youngsters were keeping the doors open to higher education and thus were operating with some flexibility. We must be disturbed, however, when we consider at H.S. + 2 the five I.A.-Gen. students who were

attending or were planning to attend college. We must worry about how and where they were missed, for we realize that their motivation must be particularly high when they are willing to face and attempt to overcome the tremendous odds against admission to college of non-college preparatory students.

That some youngsters were not acting in what an outside observer would consider a realistic manner is shown by the fact that as late as spring of the twelfth grade 16 of 47 students with I.Q.'s of 105 and below were still aspiring to college. It is true that 5 of the 16 were attending college at H.S. + 2 but we are concerned about the difficulties and the frustrations faced by them and the remaining 11 subjects. That these results are indicative of a national problem may be seen in the recent conclusion of the Project TALENT staff, arrived at from a study of 440,000 youth in a national sample, that "We may tentatively conclude that students at the lowest aptitude levels expect more education and think that their parents want them to have more education than is realistically possible or even beneficial to them." (Flanagan, *et al.*, p. 5-61)

There was a definite trend among these subjects to aspire to educational levels higher than their parents, and for the brighter and higher socio-economic status students to take advantage of the opportunities available to them. It does seem, however, that too little time and attention may have been directed toward the less academically able student and the student from the lower socio-economic group. We should re-examine our school programs to guarantee that these youngsters are not neglected and that they be given ample opportunity to develop to the greatest degree whatever potential they have.

CHAPTER TEN

Implications for Theory of Careers

In 1909 the founder of vocational guidance, Frank Parsons, spoke of the young person's need for understanding of himself, for knowledge of occupations, and for "true reasoning" in relating the two. In the years since, psychology has produced theories of personality the concepts and insights of which can help a young person to self knowledge, the concern with occupations has broadened into a concern with careers, and studies of career development have generated findings that can serve a young person as partial guides to true reasoning. It can now be said that Parsons had a valid and programmatic vision. Our work is in its ken.

With a web of publication and personal influence, Donald Super has shaped and directed the emergence of the psychology of careers as a distinctive field in American psychology. His ideas and his research example have been our guides. We believe that in small measure we have succeeded in corroborating his theory of vocational maturity, and that therein lies our main contribution.

From David Tiedeman, tutor and mentor to both authors, we derive our research style, both in its predilection for self-concept variables as predictors and as explanatory constructs, and in its particular quantitative procedures. If we have been able to add to Super's theory of vocational maturity, ours has been an addition of detail and precision that can be attributed to the heuristic power of our quantitative methods. In fact, the major implication we claim for theory of

careers is that appropriate quantitative analyses of longitudinal data yield statistical and probability models for human developmental processes that enhance the detail, precision, and utility of verbalized theories.

Wherein do we agree with Super, and what have we added to his formulations? We agree with his placing of students in eighth to twelfth grade in a tentative substage of an exploratory stage of a developmental sequence, wherein the main task is the crystallization of a vocational choice, and where rational compromise between personal needs and social press are required for healthy adjustment. We agree that self-concept imagery dimensions provide the most relevant measures of the ingredients of the personal equation which the notions of compromise and of coping represent. We agree that vocational maturity is a most meaningful developmental concept, that it is emergent with the passage of time, that it is persistent over time, and that is is differentiated into a multidimensional syndrome of traits, the kernel of which is informed planfulness.

This study has added a technique for scaling eight traits in the vocational maturity syndrome, the Readiness for Vocational Planning scales (RVP), for subjects in the eighth through tenth grades. It has given quantitative demonstration of the characteristics of emergence and persistence, as well as of the basic multidimensionality. In an extended series of concurrent and predictive validity studies, employing the discriminant analysis methodology, the predictive validities of the RVP measures have been demonstrated, against criteria such as high school curriculum choice, educational aspirations, socio-economic and

Roe level of occupational aspirations, and, in one case (the seven year followup) Roe group of occupational placement. The single most dramatic predictive validity demonstration was of the predictability of a "success of vocational adjustment" rating based on interviews conducted two years out of high school from RVP scale scores collected seven years earlier in the eighth grade.

Career theoreticians already know that vocational maturity is a valuable concept. What is surprising and challenging in our analyses is that the RVP measures collected in the eighth grade, shortly before our subjects had a group guidance course based on Katz' text (1958), have in general more predictive validity against followup criteria than do the RVP measures collected in the tenth grade. This trend is most obvious in the seven year followup studies (Chapter Seven), where the eighth grade RVP succeeded against every criterion but Roe group of occupational aspiration, and the tenth grade RVP succeeded against no criterion at all. Our interpretation is that we have in hand a case study that shows early vocational maturity (eighth grade) in some urban students. We believe our data support us in our attribution of important degrees of readiness for vocational planning to about half of our subjects at the eighth grade level. If the pressure of required educational decisions shortly thereafter continues its presence in our junior high schools, we think that guidance programs should attempt to create as much vocational maturity as possible as soon after the youngster enters junior high school as possible.

Our trait-statistical method has perhaps put more emphasis on individual differences in developmental patterns than has Super,

although he certainly has taught us the necessity of the concept of patterns. Our quantification has allowed us to demonstrate that many of our subjects had "more" RVP early in the eighth grade than was average among the tenth grade patterns. As we stared at the displays of 110 developmental sequences for boys and girls given in our tables for Chapter Eight, we began to see four kinds of patterns, the delineation of which we wish to reiterate here.

Differential Career Processes	
Constant Maturity	Consistent, persistent, realistic pursuit of the first stated goal
Emerging Maturity	Passage through the stages and tasks of Super's developmental model
Degeneration	Progressive deterioration of aspirations and achievement, accompanied by frustration and loss of status
Constant Immaturity	Persistent fixation on phantastic, unrealistic goals, with no advances in achieved level

Each subject was rated into one of these categories on the basis of information from the three school-years interviews. The resulting ratings were shown to have a strong contingency relationship with ratings of success of adjustment based exclusively on the information from the interview conducted two years out of high school. We hope that analyses of future followups will show long-range predictive validities for these ratings, and that other investigators will find these categories applicable to the career patterns in their data.

In the application of discriminant function methodology as a specific trait-statistical approach to career research, we have but followed in the pioneering footsteps of Tiedeman and Rulon (1951, 1952).

Cooley has already given the classical demonstration of the fruitfulness of the method in his longitudinal study of science careers (1963), and his current research programat Project TALENT is yielding the definitive proof of the predictability of career development from traits of personality by means of discriminant methodology (1965, 1966). However, at the urging of Tiedeman and Super, we have taken what may be a pioneering step in the application of Markov chain analysis to career development data. We have been able to show mathematical theories for observed transitions in coping behaviors, in educational aspirations, and in Roe level and group of occupational aspirations. It is our belief that the theoretical formulations for these processes represented by the stationary transition matrices and limiting vectors reported in Chapter Eight should be of interest to career psychologists and that they have possible applications in school counseling. We hope to produce ourselves and to see others produce more interesting and useful applications of this methodology of formal probability models for career development sequences. Stochastic models provide a promising approach to the pattern analysis to which we commit ourselves when we accept the concept of career pattern as the major organizing concept in career psychology.

Finally, it seems to us that to a modest extent we have shown that girls have careers, too, and that the same modes of analysis and understanding may be applied to the careers of girls and young women that have shed light on career processes in boys and young men.

CHAPTER ELEVEN

Implications for Counseling

The major objective of this study, as stated in a previous chapter, was to gather information which would make it possible for guidance counselors to give maximum aid to youngsters needing to make the vital pre-career decisions forced on them at a very early age. These past seven years have left us with many vivid impressions--some expected and some totally unexpected--and we intend to set forth some suggestions based on our findings which might be put to immediate use pending additional research findings, and which should justify the time and effort expended on this research.

It had been hypothesized that RVP scores, representing as they do ability to solve problems, might be developed to a higher degree with bright boys from homes in higher socio-economic groups. In fact RVP responses were <u>not</u> found to be related to intelligence, sex, or socio-economic status. This was an optimistic finding with important implications:

1. Since the instrument was not biased in favor of the bright, or of one sex, or any particular socio-economic group, it could be used generally with all youngsters to determine their readiness to make educational-vocational decisions and to identify areas of weakness in their planning.

2. It indicated the feasibility of heterogeneous grouping would seem to be most beneficial because early instruction could be very general and non-specific and could acquaint <u>all</u> youngsters with the greatest

number of possibilities and alternatives.

3. It should be encouraging to guidance counselors to realize that some of the factors that might have been considered obstacles in the way of successful vocational counseling may not be the serious handicaps we once assumed them to be, or indeed may not exist at all.

Although we are able to say that RVP responses were not related to s-e status, analyses of the data revealed that s-e status was related to educational-occupational aspirations after the eighth grade. This suggests that pupils from the lower s-e groups need special attention as they progress through the educational stream to keep them aware of their potential and the possibilities that might exist for them. Conversely, it indicates that some pupils from the higher s-e groups may need extra attention to enable them to cultivate the unusually mature coping patterns required for educational-vocational achievements to which they aspire.

Although I.Q. was not related to RVP scores, it was found to be related to educational-occupational aspirations with those of highest measured intelligence aspiring to highest achievements. However, there appears in this and other studies of career development a rather serious problem with youngsters in the lowest I.Q. groups in that they tend to set their sights beyond probable achievement. While we do not suggest that these youngsters be denied the opportunity to try, we feel that the knowledge of the demands they may encounter places an additional obligation on the guidance counselor to seek out these youngsters and to deepen their insights into their coping behaviors. If, when they are fully cognizant of their motivational and cognitive strengths and

weaknesses, their choices remain unchanged, counselors must remember that freedom to choose includes freedom to fail as well as freedom to succeed.

The implications of our findings for career development theoreticians were discussed in detail in Chapter 10, but it is important for immediate counseling practices to reiterate that our findings do uphold current theory that career development is a process which extends over a long period of time. It is absolutely essential that counselors keep this process constantly in mind. The guidance counselor must always be aware that he is interacting with a pupil at a choice point--not the choice point which determines once and for all the direction in which a counsellee will go. It is true that a "wrong" decision (e.g. curriculum) can influence the ultimate achievement, and a student must be aware of the sequential effects of his choices, but within this framework his choices are part of a process that is not entirely irreversible. Even if he does make an inappropriate or "wrong" curriculum choice, which is one of the most serious choices he must make, he can reverse this decision as did five of our I.A.-General students who at high school plus two years were enrolled or preparing to enroll at four year colleges.

Our data also indicate the extreme need for the counselor to be concerned not so much with the content of a student's stated preferences, but rather to be alert to the reasons for the choice, to the "fit" of the preference to the youth's vocational self concept. For example, as noted in Chapter 5, we were disappointed in the failure of RVP to identify I.A.-Gen. curriculum students, and we noted that they

described themselves in much the same terms employed by the College Preparatory group. However, in high school plus two, five of the twelve we considered misses were attending or were preparing to attend college, indicating that they might have been aided in selecting the curriculum to which RVP assigned them if the reasoning behind their choices rather than the actual choices had been considered. They might then have been able to avoid the added time and expense required by post graduate courses needed to prepare them for higher education.

Analysis of the RVP data for the eighth and the tenth grades indicated that many eighth grade pupils scored above the tenth grade means in Readiness for Vocational Planning, while many tenth graders scored below the eighth grade mean, indicating that delay of one or more years in forced curriculum choice, as advocated by many vocational psychologists, may be unnecessary for one group and the other group apparently would not profit substantially. On the basis of this analysis, the possibility is raised that delay in forced curriculum choice is not so much the answer as would be early identification of those with low RVP. Then, some intensive guidance could be given in much the same way remedial reading is given to those who need it.

We are quite concerned over the narrow range of occupational preferences of the subjects in this sample. At grade eight, for example, three occupations--engineering, teaching, and nursing--accounted for almost one third of the preferences. We believe that this is, in part, the result of exposure to the news media, movies, T.V., etc., but we also believe one function of the schools should be to broaden the occupational horizon of the pupils, in effect, to counteract the favorable

publicity given to the so-called glamour occupations. The dissemination of occupational information may seem to some to be clearly and solely in the domain of the guidance counselor, but we feel that introduction to the myriad occupations, both present and future insofar as we can predict, should begin very early with the classroom teacher and should be part of the pupil's everyday experience in the classroom. Some possible methods and techniques to accomplish this end will be suggested in the paradigm for improving decision-making ability. (pp. 211-213)

We feel that an RVP-type instrument would be very useful for the individual counselor to use in identifying those in greatest need of help and in identifying the areas of greatest need. However, until such an instrument is available, it would be well for the guidance counselor to keep in mind that the discriminant analyses indicated that Evidence for Self Rating and Accuracy of Self Appraisal contributed most heavily to the discriminating power of the RVP battery. This suggests the importance of determining the extent of this ability with counselees very early, and also points out the urgent need for early assistance to youngsters in developing accurate perceptions of their abilities. One step that might be taken, for example, would be to inform young people of the results (preferably in %iles or quartiles) of tests administered to them. Over and over again we heard that "some" tests had been taken but the subjects had never been informed of the outcomes. Some other suggestions along this line are included at the end of this chapter.

Our findings indicate the need for greatly increased numbers of well-trained guidance counselors in most school systems. While we cannot assess the quality of guidance offered, we can be sure that the

amount of guidance some of these subjects received was inadequate. Of the 111 subjects in this study, four said they had never seen a guidance counselor, twenty had met with one once or twice, and fourteen had seen a counselor once or twice a year. We realize that these data are of the "look back" variety and subject to the error of reminiscence but they do indicate a lack of guidance or a lack of impact of guidance, both of which are serious matters. While we strongly advocate increasing the numbers of counselors, we recognize the difficulty of obtaining a sufficient number of competent counselors in any school system and will, therefore, propose some means of increasing the efficiency of those counselors now available. First, we would suggest abandonment of the practice in some schools of having highly specialized guidance counselors; i.e., counselors for freshmen, sophomores, juniors, and seniors and/or counselors further specialized for the various school curricula. We find two essential weaknesses in such specialization. First, with heavy case loads existing in most schools, it is extremely difficult for a counselor to get to know his counsellees and for the counsellees to know and accept the counselors. We would suggest the assigning of freshmen, by some random method, to "a" counselor who would follow him no matter which curriculum he chose or what progress he should make in the educational stream. The advantages of such a method seem obvious to us; the counselor would be in the best possible position to get to know his counsellees, rapport should be far easier to establish, and we could expect to hear far less often, "My counselors never really did know me." Second, it might eliminate the possibility that a youngster considering a change in curriculum might not wish to discuss his plans with the

"non-expert" and might not feel free to make an appointment with a counselor from another curriculum. In fact, a pupil from another curriculum might even feel a little presumptuous in making an appointment with the college preparatory counselor in some schools where this is the most prestigious position. Admittedly, it would be more difficult in some respects for the now-specialized counselor, but we believe the advantages would soon outweigh the disadvantages. The counselor certainly would feel more competent to help a youngster he had known over a longer period of time, e.g., he would recognize much more easily changes taking place in a youngster such as the lowering of aspirations of a really able lower s-e student simply because of lack of encouragement at home, or the difficulties faced by another student because of goals his parents have set for him or which he <u>feels</u> they have set for him. We also believe there would be far less tendency to pigeon-hole youngsters or put them into slots by accepting a student as essentially business material because he has been so classified through assignment to a particular counselor. We anticipate and appreciate the argument that the guidance counselor could not keep abreast of all the different areas such a system would require, but we do not believe the guidance counselor should be a fountain of specific information for the students. We believe the guidance counselor should rather be like the good family doctor who knows the patient from association over a period of time, who can diagnose areas of trouble, and who offers prescriptions or advises consultations which the patient must then act upon. We believe the guidance counselor ideally would perform a very similar function as he <u>listens</u> to his counsellee, uses whatever diagnostic tools are

available to him, "prescribes" reference books or other sources of specific information which the pupil must seek out for himself. (Also see Paradigm.)

Vocational psychologists are becoming increasingly concerned with the failure of school and family to develop in young people the ability to make thoughtful decisions leading to purposeful actions. The number of young people in this study who were failing to consider relevant facts about themselves or about the world in which they live, who were basing their decisions on misinformation, or who were failing to recognize the sequential effects of their decisions add impetus to the recognition that the school must take steps to correct this failure. There have been delineated recently a number of experimental programs designed to increase this decision-making ability (Clarke, Gelatt and Levine, 1965; Cogswell, 1965; Katz, 1965; and Tiedeman, 1965) and we would like to present yet another set of possible procedures evolved, in part, in the summer of 1965 when the senior author and Professor David V. Tiedeman had a series of intensive discussions concerned with a potential "Information System for Vocational Decisions" to be developed at HGSE.[1] The theoretical framework for the System developed out of Tiedeman's belief in personal determination in career development with decision making as central in the comprehensive mechanism of differentiation and integration. (See Tiedeman and O'Hara, 1963; and Tiedeman and Field, 1965.)

"The primary goal of this proposed System is to bring a person to a condition of readiness and confidence at each of the several

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[1]This summer seminar with Professor Tiedeman was supported by funds from the New England Educational Data System.

discontinuities of vocational development: readiness insofar as an individual may develop a plan in relation to which action is possible; confidence sufficient that action may be initiated. The secondary goal of this proposed System is to permit the accumulation of data about vocational decision-making, as it is experienced and undertaken by the individual." (Tiedeman 1965a, p. 2)

Because we assume decision-making ability is developed over an extended period of time, this plan, which would make use of the most modern electronic devices in conjunction with active teacher and counselor participation, would begin with kindergarten children and continue through the various career stages to stabilization. Many functions now performed by the guidance counselor would be handled by the machines, and this would largely relieve the counselor of many tedious or purely information-giving tasks. Continual assessment of the progress of the individual would be made through RVP-type instruments, adapted to the level of the subject, and the counselor could then largely confine his efforts to areas of need and perform the kind of personal services no machine can provide.

Here then is a summary of preliminary specifications proposed to prepare individuals to make thoughtful decisions leading to purposeful actions.[1]

Kindergarten to Grade 3. The major concerns at this level will be to initiate effective problem-solving behavior, to acquaint the pupils with machines and their uses so they will be able to handle the rather sophisticated materials scheduled for the 4 to 6 grade level, and to initiate broadening of the youngsters' knowledge of the world of occupations.

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[1]See Tiedeman, *Harvard Studies in Career Development, No. 42* for a more complete delineation of the philosophical-theoretical background of the proposed "Information System for Vocational Decisions" as well as detailed specific curriculum proposals.

Grades 4 to 6. At this point in development our interest is focused on the youngster's basis for choice rather than on the choice itself. Therefore, during this period of exploration we wish to have the pupil trust his pre-conscious experiences and give full rein to his imagination as a basis for considering alternatives. We want him to develop only a sense of plan (which presumes a choice) and he may start with fantasy or defense but we would like him to realize {through counseling, if necessary even if by computer (see Cogswell and Estavan, 1965)} when he is considering fantasy, defense, or reality. The emphasis during this period should be on exploratory behavior, which should be flexible. However, our major goal during this period will be to help the youngster to know himself--his interests, values, abilities--and to use this knowledge in selecting alternatives. It should then be possible for him to make far better progress through the crystallization and other future stages.

Grades 7 to 9. The emphasis during this period will be on realistic self-appraisal of abilities, interests, and values and the relation of these to present and future educational and occupational decisions. The student will be getting ready to anticipate and carry out his own plans--most important of these is his choice of curriculum. The youngster who is successful in self assessment at this level will begin to realize that he is capable of analysis, that he can test out his ideas and that he can develop a capacity to see the consequences of his actions--representing a sense of agency. It will be very important during this period that the youngster not consider his self-assessment a "test" or a school-type assessment.

Grades 10 to 12. Particular attention must be given to terminal students who will not have the extra flexibility granted those who will go on to higher education. It is hoped that these youngsters will have developed the ability to make and execute the plans that will qualify them for the vocations they must now specify, but very careful assessment must be continued so the counselors can identify any areas of weakness and bring them to the youngster's awareness. This, of course, is not meant to suggest that college-bound youngsters be neglected, but only that all young people be given the greatest opportunity to achieve their highest potential whether they have the advantage of higher education or not.

The First Job. At the present time it seems feasible to expand on the outlined procedures for use by individuals at work, college, or home. The stress should first be placed on planning for stabilization, i.e. becoming qualified for a stable job or accepting the inevitability of instability, and later advancing to the stage of consolidation and advancement.

Post Entry Job. The "Information System for Vocational Decision" should be available for anyone wishing to use it, ideally through touch-tone type approach to be used in the home. The unemployed person or person desiring a change could then insert his private information (personal

test data, etc.) into the System and request a list of available opportunities at any time. Until this is possible, however, the System might be made available through the neighborhood elementary school. Continued counseling assistance should also be available for those desiring it.

It must be pointed out that these procedures have developed out of a philosophy of counseling whose basic ingredient is the willingness on the part of adults to cultivate in the youngster a sense of freedom of choice. This means that the parent or counselor, when he is assured the youngster is considering all the relevant factors in making a decision, must be willing to accept the decisions even when they are, on the face of them, "wrong" from an outsider's orientation. We must accept the harsh fact that freedom to choose means an individual must be allowed to make a "wrong" choice as readily as he is allowed to make a "correct" choice. If we cannot accept this premise, there is no point in considering any attempt to improve decision-making ability, because the ultimate result of such a program would be a citizenry absolutely unwilling to be dictated to--a citizenry composed of individuals able to make decisions, who insist upon making their own decisions, and who are willing to take responsibility for the outcomes. If we see advantages to individuals and to society in such self-determination, society must provide the tools to accomplish it--society as it functions through the schools.

In summary then, we must say that we found in our contacts with our 111 subjects and with all the school systems involved much to commend and much that encouraged us. We found sincere, conscientious guidance counselors, well-thought out guidance programs, and concerned teachers and administrators. We were often delighted and surprised by

the thoughtful responses given us by the young people and, in particular, we were encouraged by the amount of maturity many of them demonstrated as early as the eighth grade. We do feel, however, that, since guidance is still in its early stages of maturity, it also requires guidance and sometimes new directions to perform at its peak potentiality. If we have at times seemed hypercritical or supernegative, it is only because we feel that our contribution to the high goal guidance has set for itself will be proportional to our continuing efforts to discover and implement in our counseling the ideas that will best serve in the future.

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APPENDIX A

Regis College
Weston, Massachusetts 02193

Career Development Study
Department of Psychology

October 19, 1964

Dear _____,

It doesn't seem possible that it has been almost two years since we last talked with you. Perhaps you remember that we interviewed you when you were in the 8th, 10th and 12th grades. I want to thank you most sincerely for your wonderful cooperation in the past. We have enjoyed each of our talks with you and we have learned much from you as an individual and from the group of which you are a member. The information you have given us has already helped other youngsters who are now in the eighth grade as you were in 1957-1958.

The last time we talked with you during the spring of 1963, we asked if you would be willing to talk with us in two years, and we were pleased at your willingness to cooperate with us in this very important research project. We are now anxious to make an appointment with you and would appreciate your filling out the enclosed form and returning it to us as soon as possible. We will be glad to talk to you here at Regis College, at your home, or any other place that is convenient for you. If there are any travel expenses involved in your meeting with us, we will be glad to reimburse you.

I have enclosed a summary of the study as I thought you would like to know a little more about the research project in which you are participating. If you have any questions about the study, we will be happy to answer them when we talk with you.

Thank you again for your cooperation in the past. We look forward to seeing you in the near future.

Sincerely,

Warren D. Gribbons
Associate Professor

CAREER DEVELOPMENT STUDY

You are one of a group of 111 boys and girls (57 boys and 54 girls) who are being followed for approximately 12 years. The study is now located at Regis College, Weston, Massachusetts, and is being sponsored by the United States Office of Education.

We are especially interested in gaining an understanding of what young people think about when they are making educational and vocational decisions, and what relationship, if any, these early thoughts at the eighth grade have with the success and satisfaction of the occupation you enter as an adult.

Perhaps you will be interested in the contribution the study you are participating in has already made to counseling psychology. There has been a tendency for educators to place little faith in the long range implications of the reports students make about themselves when they are in junior high school. It has been thought that students do not know themselves well enough at this age to correctly predict their future interests and to plan their academic and vocational futures. Actually, it has been very instructive to see how predictable your educational and vocational decisions were from the interviews we had with you when you were in the eighth grade. As a result of the information already produced by the study, psychologists and educators are now wondering if they have underestimated the maturity of self-understanding possessed by many junior high school students. The study is encouraging guidance counselors working with youth in these years to take more seriously the students' views of their abilities, interests, and values and their ideas on how these personal characteristics may influence their futures. There will be a great deal of interest in the outcomes of our contacts with you during the next five years. Connections will be established between your early interview and the jobs you occupy in adult life, including, of course, the very important job for many of the young ladies of establishing a family. Although the results of the first five years of the study have been definitely worthwhile, (and have led to four publications in psychology journals), the most lasting value will result from the important contacts we plan to have with you during the next five years. Since you are a small, select group, we would deeply regret losing contact with even <u>one</u> of you. You may be assured that your continued cooperation with this study is making a major contribution to the improvement of educational guidance in America's schools, and may very well benefit your own children some day.

Publications resulting from Career Development Study:

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Warren D. Gribbons, Associate Professor of Psychology
Regis College
Weston, Massachusetts

CAREER DEVELOPMENT STUDY
REGIS COLLEGE
WESTON, MASSACHUSETTS

Tel. Regis - 893-1820
Home - 329-9193

NAME_____

ADDRESS_____

_____ IF ADDRESS IS DIFFERENT, PLEASE FILL IN BLANKS

_____

_____

PRESENT JOB

TITLE OF JOB_____

NAME OF EMPLOYER_____

LOCATION_____

IF GOING TO SCHOOL: NAME OF SCHOOL_____
LOCATION_____
FIELD OF CONCENTRATION_____

PLACE WHERE IT IS CONVENIENT FOR YOU TO MEET US: PLEASE CHECK

REGIS COLLEGE, WESTON, MASS._____ YOUR HOME_____

OTHER_____ PLEASE SUGGEST PLACE WHERE YOU WOULD LIKE TO MEET US

_____

CONVENIENT TIME FOR YOU TO MEET US

MONTH_____

DAY_____

MORNING_____ AFTERNOON_____ EVENING_____

TELEPHONE WHERE YOU CAN BE REACHED

NUMBER_____ CITY_____

APPENDIX B

8TH GRADE INTERVIEW SCHEDULE

1. What curricula are there that you can take?
2. What curriculum do you plan on choosing for next year?
3. What made you decide to take _____ curriculum?
4. & 5. Why did you decide not to choose _____ curriculum?
6. Is there any advantage to taking the college curriculum?
7. Is there any advantage to taking the other curricula?
8. What subjects must everyone who chooses your curriculum take?
9. What made you decide to take general math (or algebra)?
10. Is there any advantage to taking algebra?
11. What facts should you know about yourself before you choose a curriculum?
12. How can you predict your chances of success in different courses for next year?
13. Do you expect to finish high school?

13a. How much school do you plan after high school?

14. What occupations have you thought about as your possible life work?
15. Why would you like to become a (first choice)?
16. Why would you like to become a (second choice)?
17. Why would you like to become a (third choice)?
18. What facts should you know about yourself before choosing an occupation?
19. How much education is required to be a (first choice)?
20. What does a (first choice) do at work?
21. Is your choice of high school subjects suitable for your (first choice)?
22. Is your choice of high school subjects suitable for any other occupation in case you can't be a (first choice)?

23. What connection do you see between the subjects you'll be taking next year and the <u>work</u> you want to do later on?

24. Tell me something about your scholastic abilities. That is, tell me something about your strong points and weak points in school. (Must be accurate - compare with grades or test scores.)

25. Which abilities do you have that will help you to be successful in your program for next year?

26. Which ability do you lack that you feel would help you to be successful in your high school program.

27. Which abilities do you have that will help you in the work you are planning?

28. Which ability do you lack that you feel would help you to be successful as a (first choice)?

29. Would you check your position on this scale for verbal ability? (Quartile scale given to subject)

30. Would you check your position on this scale for quantitative ability?

31. Would you check your position on this scale for general scholastic ability? Compare yourself with the rest of your classmates.

32. When I asked you to check your position for verbal ability you marked _____. What did you base your position on?

33. When I asked you to check your position for quantitative ability you marked _____. What did you base your position on?

34. When I asked you to check your position for general scholastic ability you marked _____. What did you base your position on?

35. Tell me something about your interests. That is, the kinds of activities you like or dislike.

36. What particular interests and activities would your occupation satisfy?

37. Tell me some other interests a (first choice) has.

38. What interests do you have that will not be satisfied by your occupation as a _____ (first choice)?

39. As you know, things that are important or unimportant to us are called values. Tell me some of your values.

40. What values of yours would working as a _____ satisfy?

41. What values of yours would not be satisfied in your occupation as a _____ (first choice)?

42. Which of your values will conflict with one another in your choice of an occupation?

43. We're interested in how students make up their minds about courses and would like you to share some of the things you've gone through. Can you tell me how you decided on _____ curriculum?

44. Where did you get your information?

45. How do your parents feel about your occupational choice?

46. Suppose your parents didn't agree with your plans. What would you do?

47. Who do you feel should be responsible for your occupational choice?

APPENDIX C

10TH GRADE INTERVIEW SCHEDULE

The first forty-seven questions of the eighth grade interview were used in the tenth grade interview. The following questions were added in the tenth grade.

48. What activities are you participating in at school?

49. What jobs have you held during the past two years?

50. What do you do after school hours? (employment, especially)

51. What colleges are you thinking about? Why?

52. What preparation is needed for your chosen occupation?

53. Obtain birth order _____ and number of siblings_____.

APPENDIX D

12TH GRADE INTERVIEW SCHEDULE

1. What curriculum are you taking now?

2. In the eighth grade you told us you thought you would take the _____ curriculum. Why did (or didn't) you change?

3. Who was especially influential in helping you make this decision?

4. If you were given another chance, would you make the same choice?

5. Now I'd like you to tell me something about these past two years in school. What have you done that you liked?

6. What do you feel you've done especially well?

7. What things have you disliked or regretted?

8. What would you consider your most important experiences in the past two years in school?

9. What tests have you taken in school during the past two years? Primer: Like I.Q., College Boards or Interests tests.

10. Have the results of these tests been given to you?

11. Would you tell me how you did on each of the tests you mentioned?

12. Has anyone at school explained what these scores mean?

13. Have these results helped you make your decisions about the future? Would you tell me how?

14. Do you plan to go any further in education? School:_____. Have you already applied? Have you been accepted? Type of school:_____. Major:_____. Number of years:_____.

15. How are you planning to finance this schooling? (Parents, working, scholarship)

16. Whom did you talk with before making your plans? (Parents, guidance counselor, friends)

17. Are you planning to enter an occupation (or go to a school your best friend is going to)?

18. Now I'd like to have you tell me a little about your occupational plans for the future. What occupation are you planning to enter? First choice _____. What is your second choice?

19. Why have you chosen _____ as first choice?

20. To whom have you talked about this occupation?

21. How do you plan to reach your occupational goal? How will you prepare for it? How will you enter it?

22. What is the most important factor to consider in making an occupational choice?

23. Why do you consider this factor important?

24. In the 8th grade you were considering the possibility of becoming a _____ and in the 10th grade a _____. Will you tell me what made you change your mind (or kept same p ans)?

25. What do your parents think of your educational and/or vocational plans?

26. Do you feel that the occupation you enter is a matter of chance or choice? Explain: Could you tell me why you don't (or do) think it is a matter of chance?

27. Would you tell me something about your interests? (Primers: hobbies, activities)

28. Which of these activities have you enjoyed?

29. Which of these activities do you feel you have done well in?

30. Have you participated in any activities that you've disliked or regretted?

31. Has your experience with any of these activities helped you in deciding on your future occupation?

32. What would you like to get out of life? What do you think would make you happy and satisfied?

33. What would you like to get out of work?

34. Would you tell me something about your strong points? The things you do well in.

35. Would you tell me something about your weak points? The things you wish you could do better.

36. If we divide the class in four quarters, in which quarter would you place yourself for scholastic ability, that is over-all school ability?

37. For verbal ability, the kind of ability you need to do well in English or History?

38. For mathematical ability or the ability needed to do well in math and science?

39. How certain are you about your educational and vocational plans we have been discussing? Would you tell me why you feel certain (or uncertain) about your plans?

40. If you cannot go to _____ College (or occupation mentioned) what do you think you will do?

41. Do you have any plans for military service?

42. Do you have any plans for marriage? Are you going steady? Do you think your plans for marriage will make any difference in your future occupational goal?

43. Can you tell me something about how you feel about going to work? Probe: Are you looking forward to it?

44. When you think about work is there anything that you feel would be disagreeable about it?

45. What jobs have you had during the past two years? Which did you enjoy? Which did you dislike?

46. What occupation would you like to be in five years from now?

47. What occupation do you expect to be in five years from now?

48. If not the same, is there anything you could do to make them the same?

49. Would you say in general that these last two years have been good or bad years for you? Why?

50. What have been two or three of the best things about them?

51. What have been two or three of the most difficult things?

52. What advice would you give to a boy or girl just about to enter high school that you wish someone had given you?

Ask how feels about being in Career Development Study.

Tell about plans to talk to them in two years.

Address where can be reached.

APPENDIX E

TWO YEAR OUT OF HIGH SCHOOL INTERVIEW (1965)

Each subject was asked the following questions:

1. What is your present occupation? 1. student_____ 2. employed_____
   3. military_____ 4. housewife_____ 5. unemployed_____.

1.a) Did you graduate from high school?

1.b) Have you had any formal education since high school?

1.c) How did you choose that school?

For questions 2 through 12 each subject was asked questions which pertained to his particular status. The following abbreviations were used:

S = student
E = employed
W = housewife
M = military
U = unemployed

S2. Name and place of school or college:
E2. Name and place of employment:
W2. Schools and/or jobs since graduation:
M2. Branch of service and place of assignment:
U2. Last school or job:

S3. Year in college:
E3. How long on this job:
W3. How long married:
M3. Years in service:
U3. How long unemployed:

S4. College major: or intended major: or none yet:
E4. Job title: Description of job: How did you get the job:
M4. Job title: Duties:
U4. Could you tell me why you are unemployed?

S5. Have you changed your major or intended major since entering college? If yes, how and why?
E5. Description of training for job, if any:
Duration_____ completed_____ or incomplete_____
W5. When you graduated from high school, did you think you would be a housewife in 1964? Comments:
M5. Type(s) of training received:
Duration_____ completed_____ or incomplete_____
U5. How long do you expect to be unemployed?

S6. Favorite college subjects: Why?
E6. What do you like best about the job?
W6. What do you like best about being a housewife?
M6. What do you like best about your assignment?
U6. What changes in your plans have happened since high school graduation? Why?

S7. Least liked college subject:
E7. What do you like least about this job?
W7. What do you like least about being a housewife?
M7. What do you like least about your assignment?
U7. What have been your best experiences since high school graduation (or since leaving school)?

S8. Best grades in what subjects?
E8. How successful are you at this job:
Earnings (if you have no objections): No. of hours:
W8. How successful are you as a housewife?
M8. How successful are you as a serviceman? Rank:
U8. What have been your worst experiences since high school graduation (or since leaving school)?

S9. Best grades in what subjects?
E9. What do you consider your greatest assets as a worker? How good?
W9. What are your particular strengths as a housewife?
M9. What do you consider your greatest assets as a serviceman? How good?
U9. What are your best traits as a worker? How good?

S10. Worst grades in what subjects? How good?
E10. What do you consider your particular weaknesses as a worker? How bad?
W10. What are your weaknesses as a housewife? How bad?
M10. What do you consider your particular weakness as a serviceman? How bad?
U10. What are your worst traits as a worker? How bad?

S11. What are your plans for after college?
_____ If graduate school, where and what?
_____ If employment, where and what?
E11. What are your plans for advancing yourself?
W11. What are your ambitions for the future?
M11. What are your future plans for the remainder of your service career? Planned duration _____
U11. What are your plans for the future?

S12. How firm are these plans? 1. Very_____ 2. Moderate_____ 3. Unsure_____
E12. How firm are these plans? 1. Very_____ 2. Moderate_____ 3. Unsure_____
W12. How confident are you about achieving them? 1. Very_____ 2. Moderate_____ 3. Unsure_____
M12. What are your post service plans?
U12. How firm are these plans? 1. Very_____ 2. Moderate_____ 3. Unsure_____

All subjects were asked the following questions:

13. Are you married? (Don't ask housewives)
    When did you get married?
    Husband's/wife's occupation:
      Title and description:
      Salary: Hours per week:
      How long on job:
    Husband's/wife's education. (Details)

14. Do you have children? (age and sex)

15. Tell me about jobs you have held during the past two years, other than your present occupation.
    Specific title and description
    Duration
    Success
    Satisfaction
    Why left?
    Hours
    Salary
    How did you get the job

    Other jobs. Which one liked best and which one disliked most. Why?

16. Tell me about your hobbies and other activities during the past two years.

17. How satisfied are you with your life during the past two years? Why?

18. What are your hopes for the future?

19. How much help has your public school education been to you since you left high school? (get details)
    How could it have helped more?

20. How much assistance has school guidance given you, as you look back?
    How often did you see your guidance counselor?
    How could guidance have helped more?

21. If you could go back, what would you do differently?

22. What advice would you give to a youngster just about to enter high school?

23. What do you hope to get out of life ultimately? That is, when you look into the future what do you want to achieve for yourself and your family?

APPENDIX F

READINESS FOR VOCATIONAL PLANNING SCORING MANUAL

General Rules for Scoring

The purpose of this interview is to evaluate:

I. Pupil's ability to make accurate self-appraisal in terms of his abilities, values, and interests.

II. Pupil's ability to relate his self-appraisal to the educational and occupational worlds with realism and consistency.

III. Pupil's independence of choice.

1. Study the interview schedule to become thoroughly familiar with the questions which are asked.

2. Read through the general rules for scoring.

3. Read the specific rules and examples for Question #1. Read answer #1 on the interview schedule and place the appropriate score in the box provided for Scorer #1 on the master sheet. Follow this procedure for all remaining answers.

Scores from 0 to 4 will usually be assigned on the basis of goodness of quality and accuracy of information. Exceptions to this general rule will be noted in the scoring manual.

4 - A score of four will be given for unusually good quality answers with specific, accurate information. Mention of three concepts (ability, value, interest) with explanations will always earn a score of four points.

3 - A score of three is assigned when the subject demonstrates good specific awareness of information or understanding of the item. Mention of two concepts (ability, value, interest) will usually earn a score of three points.

2 - A score of two will be given when the subject demonstrates some awareness or understanding of the item under consideration. Mention of one concept will usually earn a score of two points.

1 - A score of one is assigned when the subject demonstrates some understanding but the answer is too vague or general to be scorable for two points.

0 - A score of zero will be given when the subject demonstrates no awareness or understanding, is inaccurate, or gives no response.

A "Q" beside a question on the interview schedule will indicate that the interviewer gave additional information or explanation; one point should be subtracted from the score. Thus a four point answer will be reduced to three points or a one point answer will be reduced to zero points.

Because examples of all possible answers could not be included in the manual, the scorer may be undecided in some cases whether to assign a score of three or four, three or two, etc. In these cases he should keep in mind that quality and accuracy are usually the essential requirements of a good response and assign a score on that basis.

If a subject spontaneously clarifies a previous answer at any time during the interview, he should be given credit on the appropriate question.

"Concepts" as used in this manual will refer to abilities, interests, and values.

Immediate choices are concerned with high school curricula and courses. Intermediate choices include college, technical institute, apprenticeship, etc. Ultimate choice is the final occupation.

(1) What curricula are there that you can take?

A list of curricula at the subject's school will be provided the scorer.

2 - Knows all curricula available.

1 - Mentions two (unless only two are available - then, 2 points will be given).

0 - Mentions only one OR doesn't know.

---

(2) What curriculum do you plan on choosing for next year?

2 - Mentions definite choice

1 - Undecided between two choices.

0 - No plans.

---

(3) What made you decide to take _____ curriculum?

4 - Mentions relationship of any <u>two</u> concepts to intermediate or ultimate choice. OR Mentions relationship of <u>one</u> concept to intermediate or ultimate choice <u>plus</u> advantage of training in course or greater freedom of choice in future.

(C.P.) "I want to be an engineer because math has always fascinated me (interest). I've been getting all A's so I'm pretty sure I can handle it (ability)."

(Bus.) "I'm going to work in an office when I get out and they'll teach me things I need to know for that. That's what I do my best work in - math and stuff (abilities)."

(C.P.) "I need it for college preparation and I should be able to do the work (ability). If I did change my mind, it's easier to go down than go up."

3 - Mentions relationship of <u>one</u> concept to intermediate or ultimate choice. OR Greater freedom of choice. OR Relates subject to intermediate or ultimate choice.

"I have the ability to succeed in the college course."
"Even if I don't go to college, there are plenty of jobs open."
"In business course we take typing and shorthand and that comes in handy when you're a secretary."

2 - Relates to intermediate or ultimate choice. Mere statement without elaboration.

"I want to go to college."
"I want to be a secretary."
"I'm going to be an electrician."

1 - Vague, general, or unsure. Mentions specific subject or decision made with parents.

"It's about the best thing to get in."
"We decided."
"I might take it but I'm not sure."
"I have to check on it."

0 - No reason OR Inappropriate for intermediate or ultimate choice.

(Bus.) "I think I'll go in for engineering."
"No particular reason."
"My mother wants me to."
"That's all there is."

(4 & 5) Why did you decide not to choose _____ curriculum?

4 - Mentions two good reasons for his choice. OR Two disadvantages for him.

"Don't think I could do too well (A). Kind of hard and I'm not planning to go to a four-year college."
"I have to go to work as soon as I finish high school. Business course will teach me typing and shorthand and I'll be prepared to go to work."
"I need college prep in order to get into engineering or law. If I decided not to go to college in later years, I'd still have courses and would be easier to get a job."

3 - Mentions one good reason for or against.

"I wouldn't be able to do it - too strong for me (A)."
"Could always drop back to that if I don't do well the first year."
"I plan to become a secretary and I'll need the typing."

2 - Mentions one general reason for or against.

"I'm not going to college."
"I don't want to go into the business world."

1 - Repeats first choice or simple negative.

"Because I'm going to take college prep."
"I don't want to take the trade course."

0 - No awareness or no independence.

"Have to wait until you get there."
"Mother wouldn't let me."

---

(6) Is there any advantage to taking the college curriculum?

4 - Relates to college and occupation. OR Relates to college and mentions greater freedom of choice.

"Prepares you for the college of your choice and furthers you in the hope for your career."
"Get more math and I need it for college and to be an engineer. Take more knowledge in."
"Prepares you for the college of your choice, but if you couldn't go to college it would be suitable for a lot of jobs."

3 - Relates to college or occupational opportunities. OR Greater freedom of choice.

"Have a better chance of being accepted at the college of your choice."
"Even if you don't go to college, lot of jobs offered to kids who take that course."

2 - General advantage - not definite. OR Minor subject.

"Sometimes get a better job."
"Lots of jobs."
"It will help me when I get out of school."

1 - Vague advantage. OR Plan to investigate.

"If you're going to college, there is."
"Prepares you for what you want to do later."
"Don't know. I plan to find out."

0 - No awareness or incorrect.

"I don't know."
"It's nice if you're going to college but it's not good if you're not."

---

(7) Is there any advantage to taking the other curricula?

4 - Relates specific subjects to occupations. OR Ability. OR Freedom of choice.

"Business will give you courses like typing and shorthand that you need for secretarial work."

"Mechanical drawing and all the shop courses will help me when I go out to work as a machinist."

3 - Relates course to occupations. Lists subjects without relating.

"Business course would help you if you go to work in an office."
"Learn how to cook and sew."

2 - General advantage - not definite.

"It helps you get a job."
"It teaches you a lot."

1 - Vague advantage.

"It's pretty good."

0 - No awareness or incorrect.

"I don't know."
(Bus.) "Would help you to be an engineer."

---

(8) What subjects must everyone who chooses your curriculum take?

The scorer will be provided with a list of required subjects for each curriculum.

4 - Mentions all major subjects.

3 - Mentions all but one major subject - must include English and math.

2 - Mentions all but two major subjects - must include English or math.

1 - Mentions one minor subject and English or math.

0 - No awareness of requirements OR Mentions only one minor subject.

---

(9) What made you decide to take general math (or algebra)?

4 - Mentions interest and abilities. OR Relates interest or abilities to intermediate or ultimate choice.

(Algebra) "I took one year this year and was very much interested in it (I). I planned on taking it next year and then they offered to let me in the Kenyon (advanced) group (A). I jumped at it because that will also help me when I get into engineering."

(Gen. Math) "I don't think I'd be able to do algebra (A). I wouldn't need it for working in an office anyway."

(Algebra) "I like to work with figures (I), need it to go to college. If I become an engineer I'll work with figures and know how to solve problems.

3 - Mentions interest or ability. OR Relates to intermediate or ultimate choice without mentioning other concepts.

(Gen. Math) "General math will be more useful to me if I become a salesman."

(Algebra) "Most colleges require it."

(Gen. Math) "I've been having trouble with problems this year so I thought I'd better not try algebra."

2 - Is aware that it is required in his choice of curriculum.

"Have to take it."
"It's in the course."

1 - Mentions general advantage.

"To get a job."
"Seems interesting."

0 - Doesn't know or misinformation.

---

(10) Is there any advantage to taking algebra?

4 - Relates to higher math, or college, or occupation, or curriculum.

"It leads to higher math - trig and geometry."
"Most colleges require it to get in."

3 - Less specific than 4.

"Most hard math problems you could figure out with algebra."

"It help in lots of subjects you have to take later on."

2 - Demonstrates some understanding.

"More or less arithmetic and you'll always use arithmetic the rest of your life."

"Usually need a lot of math to figure out things."

1 - Vague generalization.

"It will help you in most occupations."
"It would be easier to do certain things."

0 - No awareness of advantage.

"No particular advantage."
"I don't know."

---

(11) What facts should you know about yourself before you choose a curriculum?

4 - Mentions three concepts and demonstrates understanding. OR Two concepts plus relation to occupation.

"If you'd be able to pass it (A). If you're interested in the subjects (I) - if you weren't interested you wouldn't take the course - and if you're willing to work hard enough (V)."

"How interested in the subject you are (I). How you've done so far in grammar school (A), and if it will get you where you want to go later on (V)."

3 - Demonstrates understanding of two concepts. OR One concept plus relation to occupation.

"What you can do (A) and what you're interested in (I)."

2 - Demonstrates understanding of one concept.

"Ought to be capable. If you think you're capable of keeping up with the course." (A)
"If I want to work that hard." (V)

1 - Demonstrates little understanding.

"Should try to find out about yourself."

0 - No awareness OR No understanding.

Mentions concept by name but is unable to explain it.
"Study hard."

---

(12) How can you predict your chances of success in different courses for next year?

3 - Mentions any two of the following: test scores, grades, interest, experience, value, or information from an informed source. OR Mention of abilities alone with explanation of quartiles and their use.

"How well you're doing this year (A), if you're willing to do the work (V), and how well you like the subject (I)."

"Tests we've taken and my report card mark...and the way I've been getting along."

2 - Mentions one criterion given above.

"Way you do in grammar school."
"Those tests I took show me I can do very well in the college course."

1 - Less specific or vague.

"Depends on what your best marks are."
"By your abilities - how good you'd be." (No further explanation.)

0 - No awareness.

"Can't right now."
"Just have to study hard."

---

(13) Do you expect to finish high school?

No score.

(13a) How much school do you plan after high school?

1 - Plans are in agreement or fairly close to pupil's stated requirements for chosen occupation.

0 - No agreement or taking wrong curriculum for plans.

(Bus.) "Four years of college."

---

(14) What occupations have you thought about as your possible life work?

No Score.

---

(15) Why would you like to become a (first choice)?
(16) " " " " " " " (second choice)?
(17) " " " " " " " (third choice)?

4 - Refers to three concepts. OR Refers to two concepts plus previous experience or information from informed person.

(Baseball player) "I have enough ability to become one (A). And the fame (V), and the fun of playing baseball (I)."

(Engineer) "My father was an engineer and I've seen him doing his work and I like it (I). I'd like to go overseas in a missle base - good pay (V)."

(Teacher) "I've always like to read stories to children since the second grade (I & Experience), and all teachers have told me I'd be a good teacher."

3 - Refers to two concepts OR One concept plus experience or information from an informed person.

(Secretary) "My father is in the insurance business and I do all his typing and graphs and I enjoy it very much."

(Engineer) "It's a good way to make a living (V). My father is an engineer and he thinks I might like it."

2 - Refers to one concept OR Experience OR Information from an informed person.

(Dietitian) "My aunt was a dietitian and she says it's fun working in a hospital."

(Nurse) "Ever since the second grade when I was in the hospital, I've always had a desire to help people (V)."

1 - Vague or general.

"It's interesting."
"Seems like an interesting job."

0 - No mention or irrelevant.

"I don't know."
"It gives you experience."

---

(18) What facts should you know about yourself before choosing an occupation?

4 - Mentions three concepts and demonstrates understanding. OR Two concepts plus education or experience.

"Know what I like (I), what's best suited for me (A), whether I have to travel (V) and the pay (V)."

"What you want to do and like to do (I), what you think is best for you - what you think you can do best in (A), what you can help others in most (V)."

3 - Mentions two concepts with understanding. OR One concept plus education or experience.

"Know whether you'd be able to do that job (A) and the opportunities it offers - really depend on that job for security (V)."

2 - Mentions one concept.

"Does it pay me enough to support a family? (V)"

1 - Vague answer.

"If you like the work." (without implication of experience)

0 - No awareness.

"I don't know."
"Should know what you want to be and don't change mind."

---

(19) How much education is required to be a (first choice)?

2 - Very accurate and specific.

(Teacher) "Four years if I go to teacher's college. Five if I go to liberal arts because I'll need masters."

(Private Sec.) "Two years of business school."

1 - Some uncertainty OR Slight misinformation OR Plans to get information.

(Engineer) "MIT - I don't know if it's 4 or 3 - think it's 3 and special masters for one year."

(Anapolis) "I'm not sure but I'm going to try to find out now."

0 - No awareness or misinformation.

---

(20) What does a (first choice) do at work?

3 - Accurate, detailed knowledge.

(Office Worker) "Filing, bookkeeping, typing, shorthand, keeping records."

(Electrical Engineer) "Supervising wiring jobs and planning wiring jobs on buildings and houses."

2 - General or partial knowledge.

(Accountant) "Must keep books straight - everything in order."

(Secretary) "To please the boss - be sure your work, typing, is correct."

1 - Vague OR Minor aspect of job OR Confused about occupation, e.g., "Electronics engineer builds bridges."

(Psychiatrist) "Do all he can for the patient."

(Engineer) "Help design things for people."

0 - No awareness or misinformation.

"It's hard work."

(Engineer) "Have to be available anytime you're needed."

---

(21) Is your choice of high school subjects suitable for your (first choice)?

4 - Mentions relationship of <u>two</u> subjects <u>plus</u> necessity of chosen curriculum for intermediate or ultimate choice. OR Two subjects plus freedom of choice.

"To get into teachers college or any college, need languages, algebra, and English."

"In business we get all the necessary requirements for an office job: typing, filing, dictation."

3 - Mentions relationship of one subject <u>plus</u> necessity of chosen curriculum for intermediate or ultimate choice OR Two subjects. OR One subject plus freedom of choice.

"I can take the course in physics and college prep. Will prepare me for college."

"Biology and Latin - those would really come in handy." (Nurse)

2 - Mentions one subject OR Relationship of curriculum to intermediate or ultimate choice. OR Freedom of choice.

"Business course takes in typing."
"Have to go to college and college course would be a help."

1 - Vague - no specific subjects or relation to future.

"College prep would be the right one."

0 - No awareness or misinformation.

---

(22) Is your choice of high school subjects suitable for any other occupation in case you can't be a (first choice)?

4 - Cites relationship of specific subjects to occupation OR Refers to freedom of choice of either college or immediate job (in case of college preparatory).

(CP) "Well, it will prepare me for many colleges and even if I can't go to college, I'm sure I could get a job with that background."

(CP) "Suppose you could be an accountant or engineer. Anything that requires a knowledge of math - or even English."

(Bus) "If you take typing and business subjects, you could be a clerk or a typist."

3 - Mentions specific occupation without elaboration OR Mentions general area of opportunity.

"Business curriculum would prepare you for many other jobs in an office."

(CP) "Could be a lab technician or a chemist."

2 - No mention of specific subjects or occupation but demonstrates awareness of flexibility in intermediate or ultimate choice.

"Yes, it covers many fields."
"Can get lots of jobs with that course."
"Could go to a different kind of college." (Planned engineering)

1 - Vague relationship or general response.

(Bus) "It will train you for marriage." (Would be 3 pt. of Home Econ. course.)

"It will help you in the future."
"Lots of things you could do."

0 - No awareness or inconsistent.

(Bus) "I could be a teacher."
"I don't know."

---

(23) What connection do you see between the subjects you'll be taking next year and the <u>work</u> you want to do later on?

4 - Mentions relationship of two subjects to intermediate or ultimate choice.

(Bank work) "Shorthand, typing, bookkeeping for bank work. English is required too."

(Eng.) "Second year math for engineering. That and English-need to get into college to study for engineering."

3 - Mentions relationship of one subject or two subjects in the same area OR Cites need for chosen curriculum in intermediate or ultimate choice.

"Biology and science (same area) will help me with the course I'll take in college."
"A secretary needs the business course."
"I have to take that course to get into college."

2 - Mere mention of subject or general relation of course to intermediate or ultimate choice.

"Courses are getting me ready for college."
"Can use general business anyplace."
"English." (Actress)
"Math." (Accountant)

1 - General reference to future. Demonstrates little understanding.

"It will help me later on."
"Foundation for work you want to do."

0 - No understanding or sees no relationship.

"I don't see any."

---

(24) Tell me something about your scholastic abilities. That is, tell me something about your strong points and weak points in school. (Must be accurate - compare with grades or test scores.)

4 - Cites evidence of both verbal and quantitative OR Either verbal or quantitative plus general scholastic.

"Strong in verbal - 1st Q - 1st Q on population. Second in quantitative - 3rd in population sample."
"1st Q on marks (gen. schol.) - 1st on verbal with class."
"Pretty weak in English - don't get top marks in it. I try though but it just doesn't seem to come easy to me. Math comes easy to me - I'm able to do it with ease."

3 - Cites evidence of either one of the following: verbal, quantitative, or general scholastic with clear implication of ability not just liking for the subject.

"When we took the I.Q. test I ranked 1st Q in the class and population."
"Math is best subject - comes out in every test. (evidence) English is a strong point. (no evidence)."
"I got all A's and B's this year."

2 - General statement of ability without evidence.

"Fairly good in English. Don't enjoy algebra."
"I do all right in English this term - pretty good in math."

1 - Mentions liking for subject without implication of ability OR Mentions ability in minor aspects of subject or outside activity.

"Like English, algebra."
"Like to draw - like to fool around with weights."
"Weak in English diagramming."

0 - Indicates no understanding.

"Don't know. I can't judge by myself."
"Don't know much about that."

---

(25) Which abilities do you have that will help you to be successful in your program for next year?
Note: Compare with Q 24. If same as weakness mentioned in 24, assign score of 0 point.

4 - Mentions relationship of high school curriculum to one of the following: verbal, quantitative, general scholastic, or two subjects.

"Need verbal for Latin and English. Arithmetic will help me in all other math subjects."
"I'm quick to learn" (1st Q on V & Q).

3 - Mentions one subject and its relation to high school.

"English will help me in Latin."
"Mostly math - have to take algebra next year."

2 - Simple enumeration without relationship.

"Math."
"English will help."

1 - Mentions one aspect of subject, minor subject, or vague statement. OR Mentions non-scholastic ability.

"Guess they all would."
"Getting along with people."
"Music."

0 - No awareness of ability or has mentioned some area as a weakness in #24. OR Mentions some subject he hasn't had.

"Training in grammar school." (not ability)
"Try hard."

---

(26) Which ability do you lack that you feel would help you to be successful in your high school program.
Note: Compare with #24. If same as strength mentioned in 24, assign score of 0 point.

4 - Mentions relationship to high school of any one of the following: verbal, quantitative, general scholastic, or two subjects. OR Mentions discrepancy between test scores and grades and offers solution. OR Superior student who has had no difficulty and anticipates none.

"I lack verbal ability and it will make English and Latin hard for me."
"Actually I don't lack quantitative (1st Q on tests) but I haven't been working up to it. I'll have to work harder."
"Well, I really can't think of any." (1st Q in V & Q)

3 - Mentions one subject and relation to high school. OR One weakness and solution.

"Have a hard time in reading and then telling what I read."
"In English - I'll probably go to summer school and learn more about it."

2 - Simple enumeration OR Mention need to study and relates to course or grades.

"Math." "English."
"I don't study. I could get good marks if I did."

1 - Mentions one aspect of subject, minor subject, non-scholastic. OR Need to study by itself. OR Ability which requires special training not available to him yet.

"Grammar." "Typing."
"I need to study." "I stutter."

0 - Demonstrates no understanding of question. OR Has mentioned same area as a strength in #24.

"I don't know."
"English is important - pertains to Latin." (mentioned English as strong point.)

---

(27) Which abilities do you have that will help you in the work you are planning?

4 - Mentions relationship to occupation of any one of the following: verbal, quantitative, two subjects, special ability need in occupation.

(Pharmacist) "Math and languages - have to know Latin and have good balance of figures."
(Teacher) "Verbal ability - have to be talking to class."
(Mechanic) "I'm good with my hands - have mechanical ability and you need that."

3 - Mentions one subject and relation to occupation.

(Eng.) "Algebra will help to figure out those special things and designs."
(Sec.) "My spelling. A secretary has to know how to spell when she writes letters and things."

2 - Simple enumeration.

"Math." "Filing."

1 - Non-scholastic references.

"I like to meet people."
"I don't mind hard work."

0 - No awareness or states ability that he has already mentioned as weakness.

---

(28) Which ability do you lack that you feel would help you to be successful as a (first choice)?

4 - Mentions relationship to occupation of one of the following: verbal, quantitative, two subjects, or special ability needed in occupation. OR Mentions weakness <u>plus</u> a solution. OR Superior student who has had no difficulty and anticipates none.

(Teacher) "Find it hard to get up and talk in front of people. I'm going to join the Dramatics Club to try to get over it."
(Eng.) "Well, I don't really know. I'm 1st Q in V & Q so I don't think I should have too much trouble."

3 - Mentions one weakness and relation to job.

(Sec.) "Spelling - have to be able to spell."
(Eng.) "A little art is involved in designing things."

2 - Simple enumeration OR Not sure weakness is involved in chosen occupation.

"I'm not sure how much math is needed."

1 - Non-scholastic weakness.

"Bad temper."
"Lack of patience."

0 - No awareness OR Mentions area which has been mentioned as strength in #27.

---

(29) Would you check your position on this scale for verbal ability.
(30) " " " " " " " " quantitative ability.
(31) Would you check your position on this scale for general scholastic ability.
Compare yourself with the rest of your classmates.

Subtract pupil's estimate of his rank in class from his actual rank which will be inserted into the schedule. Disregard direction of discrepancy.

I.E., His estimate — 2nd Q / 1st Q — 1st Q / 3rd Q

1 + = 2 pts. 2 = 1 pt.

Remainder		Points
0	=	3
1	=	2
2	=	1
3	=	0

---

(32) When I asked you to check your position for verbal ability you marked _____. What did you base your position on?

2 - Mentions two sources such as English marks and test scores.

1 - Mentions either English marks or test scores. OR Refers to group standing.

0 - Cites no evidence.

---

(33) When I asked you to check your position for quantitative ability you marked _____. What did you base your position on?

Same as 32 except math marks must replace English marks.

---

(34) When I asked you to check your position for general scholastic ability you marked _____. What did you base your position on?

2 - Mentions any two of the following: verbal and quantitative; I.Q. test score; general grades; group standing.

1 - Mentions any one of the following: verbal and quantitative; I.Q. test scores; general grades; group standing.

0 - No evidence or inaccurate.

"I always get my best marks in English."
"I just guessed."

---

(35) Tell me something about your interests. That is, the kinds of activities you like or dislike.

3 - Demonstrates clear understanding of concept by mentioning two or more interests (excluding sports and dancing.)

"I like to fool around with motors. I do some carpentry - wood-working. Don't like competitive sports much."

2 - Mentions one interest (excluding sports and dancing.)

"I collect stamps. Have been collecting them for a long time."

1 - Mentions sports (may list several) or dancing.

0 - No understanding or confusion with other concepts.

"I'm good in math."
"Don't do things I don't like."

---

(36) What particular interests and activities would your occupation satisfy?

2 - Mentions two interests related to occupation.

(Naval Arch.) "I like to do challenging problems in math and I build model ships. I like to do that."

1 - Mentions one interest related to occupation.

(Sec.) "I love typing. I even do it at home."

0 - Demonstrates no understanding of concept or mentions unrelated activities.

---

(37) Tell me some other interests a (first choice) has.

4 - Demonstrates awareness of interest <u>and</u> agrees with his interest as stated in #35.

(C. Eng.) #35 - "I love to build things and stuff."
#37 - "Likes math and creating."

(Ped.) #35 - "Being with babies and helping people."
#37 - "Interested in babies not in making discoveries."

3 - Either accurate knowledge of interest OR Agreement with own interests (even though incorrect.)

(Pharmacist) "He enjoys working with people, filing, interested in science."
(Accountant) "Likes to add up figures and problems."

2 - Emphasizes relationship of minor aspect of occupation.

(Interior Dec.) "Likes to make things look new."
(Teacher) "Likes to read."

1 - Vague

(Office Worker) "Interested in knowing more about their work."

0 - No awareness or confusions with other concepts.

"Don't know. I've never talked to one."
(Sec.) "Interested in how she can satisfy boss." (Value)

---

(38) What interests do you have that will not be satisfied by your occupation as a _____ (first choice)?

2 - Mentions two interests.

1 - Mentions one interest.

0 - No mention or mentions interest that has already been mentioned as being satisfied in 36 or 37.

---

(39) As you know, things that are important or unimportant to us are called values. Tell me some of your values.

4 - Mentions two values which demonstrate understanding of concept.

"I value security, being with my parents, being rated at the top of my class, and having a sound education."

"Like to get along with people, to do good work, to please my parents."

3 - Demonstrates clear understanding of concept by mentioning at least one value.

"I like to help people. That would be a satisfaction."
"Like a steady job and enough money to support a family."

2 - Simple enumeration of things important to him OR General reference to happiness or success.

"My family means a lot to me." "Earning a living."
"Leading a happy life." "Being successful."

1 - Not clear but demonstrates some awareness of concept.

"You should have faith." "Keeping up on my job."

0 - No understanding of concept or confusion with other concepts.

---

(40) What values of yours would working as a _____ satisfy?

4 - Names two values. Must be consistent with occupational choice.

(Nurse) "Really want to help people get better. If I get married, I'd be sure a secure job was waiting."
(Int. Dec.) "Would have security because you'd be trained. Would be cooperating with people you work with."

3 - Mentions one value.

(Pharmacist) "Working for himself. Independence."
(Accountant) "Gets enough money and work is steady."

2 - Simple enumeration of things important to him. Mentions security, independence, etc., with no details on Q.

1 - Vague OR General reference to happiness or success.

"To be successful." "To do my best work." "Friends."

0 - No understanding OR Confusions with other concepts OR Not consistent with occupation.

"I like to do it."
"Make a lot of money." (Missionary)

---

(41) What values of yours would not be satisfied in your occupation as a _____ (first choice)?

2 - Mentions two values.

1 - Mentions one value.

0 - No mention or mentions value that has already been mentioned as being satisfied in #40.

---

(42) Which of your values will conflict with one another in your choice of an occupation?

2 - Demonstrates awareness of conflicting values and gives clear explanation of how values conflict.

(Pediatrician) "Won't be able to be with family too much if I become important."
(Psychiatrist) "Won't be able to have much social life at first because of studying."

1 - Mentions conflicting values but explanation not as clear as above.

"Take up most of my time. Might not give me too much time."
"Stability and independence." (Q) "Working for someone else you might feel more stable." (Dropped one point for Q)

0 - No awareness.

"None that I know of."
"Don't know."

---

(43) We're interested in how students make up their minds about courses and would like you to share some of the things you've gone through.
Can you tell me how you decided on _____ curriculum?

4 - Mentions relationship of any two concepts to intermediate or ultimate choice. OR Mentions relationship of one concept to intermediate or ultimate <u>plus</u> greater freedom of choice. OR Cites informed person (Counselor, Teacher in guidance course, etc.) and one of above.

"I talked with my teacher, especially English (guidance course) and she said I should--and I thought I had the ability to take Curriculum II."
"I didn't have the marks for Curriculum I. If I changed my mind I could go to business course. It would be harder to go from business to CP because I wouldn't have language."

"Test last year. I was 1st Q on test. 2nd Q on marks and my values are toward college so it's two against one. With my occupation, I would have to go to college."

3 - Relationship of one concept to curriculum or occupational choice. OR Greater freedom of choice. OR Relates curriculum to occupational choice.

"I want to be a psychologist and you have to go to college to be a psychologist, so I wouldn't find the other courses too valuable."
"I like math a lot - not just because the curriculum contains math. Math is good for engineering too."
"Didn't have the marks to get into Curriculum I."

2 - Relates to intermediate or ultimate choice without explanation. OR Refers to specific subjects taken in high school without clear explanation of relationship. OR Talks to informed person.

"My cousin is a nurse and I talked to her."
"Talked to guidance counselor. He helped me think what I should do. My decision."
"My girl friend is taking it, my mother wanted to have me take it, and I wanted to go to college."

1 - Vague, general or states other person (uninformed) told him to take the curriculum.

"Always wanted to take the business course."
"Well, my father didn't study and he's a janitor and I want to do better."

0 - No awareness, no answer, or taking wrong curriculum for preferred occupation.

(Teacher) "Business course more suitable for job."
"My mother wanted me to take it."

---

(44) Where did you get your information?

4 - Use of three sources e.g., informed persons, reading books about occupations, catalogues, etc.

"From my teacher (guidance), from the book, (YT&T). I talked with my cousin who is a nurse."
"From a guidance book, my parents, teachers and catalogues."

3 - Use of two sources.

"From this book (YT&T) and my cousin who has a master's degree."

"Mostly teacher and sent away for catalogues."

2 - Use of one source.

"My uncle is a pharmacist and I like to watch him work."
"College catalogues."

1 - Discusses plans with presumably uninformed person.

"Talked it over with my uncle."
"My mother and father thought it would be best to take CP."

0 - Has not discussed plans with any one else or looked for information. No reference to use of informed sources.

"From nowhere. Just thought of it myself."

---

(45) How do your parents feel about your occupational choice?

2 - Knows parents attitudes and elaborates.

"They think it's wise because if I work I'll be able to pass it and will have all the job opportunities open to me."
"They don't particularly like the idea of my becoming a teacher because my mother and father both teach. They would let me if I really wanted to."

1 - Knows parents attitudes. Simple statement.

"They like it."
"They approve."

0 - Does not know parents attitude or not clear what parents attitude is.

"Not sure what they really want."
"Haven't discussed it with them."
"They know about it."

---

(46) Suppose your parents didn't agree with your plans. What would you do?

4 - Assumes responsibility but willing to discuss it with parents, and offers solution if parents cannot be convinced.

"Talk it over with them. They might change their minds. If they didn't, I'd try to find work and get a scholarship."

"I'd try to get them to change their minds, but if they didn't I'd explain to them that I really wanted to do this and make them understand. Then I'd probably have to go to work to earn the money."

3 - Assumes responsibility for final choice but willing to accept a compromise.

"I'd try to see if there was something else they wanted me to do. Then, if I liked it almost as much, I might change my mind."
"I'd really have to decide, but we might be able to compromise. I would like to please them, but I'd have to like it too."

2 - Attempts to convince parents but no other plan offered. OR Would do it anyway with no explanation.

"I'd try to show my parents my point of view."
"Try to convince them."

1 - Would consider another occupation.

"I'd probably look for something else and then ask them."
"I'd think about what they wanted me to do."

0 - Assumes no responsibility or doesn't know.

"I guess I'd have to do what they wanted."

---

(47) Who do you feel should be responsible for your occupational choice?

2 - Takes responsibility with explanation.

"I should. They can't think what I'm thinking. They don't always know my interests."
"Myself because I'm the one that's going to be doing it."

1 - Takes responsibility with no explanation. OR Parents and self.

"I should." "My mother and father and me."
"Myself."

0 - Does not take any responsibility for choice. OR Disagrees with response to #46 OR Parent or self.

"My mother and father." "Myself or my mother and father."
"I should." (#46 "I'd do what they wanted me to do.")

APPENDIX G

Table 1

Correlation Matrix for 41 Items on 10th Grade RVP Interview (collected in 1961)

Var	1	2	3	4	5	6	7	8
Mean	2.600	2.464	2.091	2.400	2.300	0.036	2.209	2.482
S.D.	0.901	0.786	0.973	1.085	1.231	0.268	0.879	1.531
1	1.000							
2	0.316	1.000						
3	0.262	0.172	1.000					
4	0.090	0.179	0.061	1.000				
5	0.134	0.139	-0.038	0.060	1.000			
6	0.137	-0.255	0.058	-0.050	-0.255	1.000		
7	0.014	-0.088	-0.022	0.094	0.035	-0.033	1.000	
8	0.088	0.125	0.161	0.258	0.093	0.002	0.061	1.000
9	0.313	0.284	0.261	0.245	0.157	-0.005	0.118	0.290
10	0.142	0.305	0.090	0.076	0.110	-0.111	-0.076	0.097
11	0.176	0.134	0.226	0.094	0.145	-0.061	0.107	0.179
12	0.032	0.041	0.085	0.098	0.156	-0.041	0.058	-0.187
13	0.128	0.043	0.088	0.035	0.225	-0.010	0.165	-0.044
14	0.074	0.112	0.031	0.025	0.103	-0.054	-0.164	-0.008
15	0.104	-0.082	0.049	-0.087	0.088	0.175	-0.169	0.099
16	0.036	-0.061	0.021	-0.155	0.169	-0.007	-0.026	-0.056
17	-0.127	0.094	-0.087	0.009	0.000	-0.026	0.031	-0.060
18	-0.101	-0.074	-0.037	0.009	0.118	0.020	0.114	-0.127
19	0.024	0.136	0.184	0.140	0.267	-0.142	0.022	0.142
20	0.117	-0.043	0.037	0.000	-0.027	0.249	0.012	-0.060
21	0.152	0.118	0.121	-0.032	-0.018	0.023	0.065	0.005
22	0.164	-0.080	0.224	0.179	-0.068	0.338	0.047	0.139
23	0.012	0.054	0.120	0.098	0.046	-0.070	0.046	0.072
24	0.150	0.136	0.172	0.186	0.048	0.098	-0.016	0.145
25	-0.032	-0.024	0.118	0.070	-0.012	0.100	0.105	-0.045
26	0.146	0.067	0.070	-0.006	0.136	-0.108	-0.244	0.015
27	0.038	0.074	0.083	-0.088	0.176	-0.245	0.067	-0.024
28	-0.008	0.031	0.163	0.056	0.063	0.076	0.010	0.058
29	-0.063	0.022	0.092	0.104	0.123	0.077	-0.080	0.006
30	0.059	0.130	0.268	0.056	0.131	0.047	-0.049	-0.179
31	-0.056	0.023	-0.069	0.093	-0.036	-0.137	0.069	-0.000
32	-0.012	0.042	0.115	0.168	-0.020	0.147	-0.081	0.035
33	0.074	-0.053	-0.009	-0.061	0.192	-0.084	-0.052	-0.110
34	-0.003	-0.059	-0.073	-0.010	0.043	0.199	-0.200	-0.084
35	0.038	0.045	0.136	0.102	0.062	-0.069	-0.054	0.045
36	0.005	0.008	0.186	0.132	0.090	-0.075	0.135	0.043
37	-0.012	-0.009	0.096	0.093	0.069	0.059	-0.010	-0.035
38	-0.169	-0.027	0.095	0.038	0.033	0.192	-0.073	-0.069
39	0.027	0.129	0.046	0.193	0.120	0.039	0.021	0.021
40	0.088	0.131	0.042	0.110	0.217	-0.065	0.144	0.108
41	0.094	-0.044	0.157	-0.019	0.240	-0.060	0.068	0.116

Table 1
(Continued)

Var	9	10	11	12	13	14	15	16
Mean	2.527	1.782	2.391	1.827	1.091	2.773	1.327	2.036
S.D.	0.786	0.961	0.879	1.082	1.193	0.686	0.527	0.741

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9	1.000							
10	0.202	1.000						
11	0.111	0.156	1.000					
12	0.119	0.201	0.139	1.000				
13	0.076	0.225	0.150	0.311	1.000			
14	0.071	0.508	0.240	0.045	0.149	1.000		
15	0.045	-0.003	0.256	0.068	0.098	0.081	1.000	
16	-0.049	-0.040	0.133	0.260	0.059	0.034	0.251	1.000
17	0.018	-0.096	0.002	0.101	0.122	-0.090	-0.028	0.094
18	0.015	0.018	0.199	0.213	0.298	0.017	-0.002	0.073
19	0.290	0.245	0.175	0.220	0.199	0.231	0.090	0.144
20	-0.086	0.143	0.003	-0.057	-0.102	0.166	0.020	0.019
21	0.066	0.273	0.091	0.155	0.166	0.040	0.007	0.126
22	0.134	0.020	0.143	0.080	0.035	0.022	0.112	-0.002
23	0.220	0.158	0.233	0.227	0.137	0.159	0.154	0.323
24	0.155	-0.001	0.178	0.131	-0.057	0.104	0.046	0.247
25	0,016	0.127	-0.029	-0.045	-0.023	0.053	-0.198	-0.006
26	-0.137	0.084	0.072	-0.017	0.070	-0.032	0.009	0.045
27	0.093	0.140	0.041	0.027	0.068	0.074	0.040	0.160
28	0.191	0.079	0.207	0.227	0.058	0.183	0.210	0.149
29	0.044	-0.070	0.209	0.049	0.059	0.060	0.137	0.079
30	0.085	0.220	0.023	0.122	0.090	0.332	0.032	0.120
31	0.174	-0.047	0.075	0.086	0.093	0.068	0.020	0.002
32	0.105	0.153	0.234	0.065	0.205	0.210	0.071	0.125
33	0.116	0.106	0.135	0.134	-0.042	0.181	-0.014	0.134
34	0.034	-0.036	0.120	0.061	0.203	-0.060	0.112	0.054
35	0.047	0.124	0.247	0.183	0.054	0.107	-0.010	0.158
36	0.199	0.155	0.348	0.364	0.140	0.199	0.122	0.134
37	0.152	0.071	0.080	0.222	0.078	0.080	0.098	0.289
38	0.003	-0.131	0.095	-0.029	0.057	0.092	0.139	0.169
39	0.123	0.070	-0.004	0.114	0.108	0.102	0.163	0.002
40	0.200	0.169	0.238	-0.107	0.332	0.160	0.077	0.110
41	0.090	0.253	0.186	-0.010	0.105	0.220	-0.047	0.040

Table 1
(Continued)

Var	17	18	19	20	21	22	23	24
Mean	2.182	2.336	2.318	2.227	1.791	1.545	1.600	1.164
S.D.	0.960	1.127	1.270	0.699	1.257	0.992	1.175	1.169

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17	1.000							
18	0.172	1.000						
19	0.073	0.187	1.000					
20	-0.130	-0.133	0.011	1.000				
21	0.115	0.063	0.358	0.086	1.000			
22	-0.018	-0.018	0.079	0.124	0.188	1.000		
23	0.057	0.012	0.240	0.034	0.334	0.283	1.000	
24	0.039	0.139	0.144	0.134	0.136	0.270	0.262	1.000
25	0.025	0.039	0.148	0.173	-0.048	-0.069	0.003	-0.112
26	-0.151	-0.016	-0.188	0.054	-0.104	-0.060	0.019	0.009
27	-0.119	-0.030	0.060	0.081	0.051	-0.068	0.212	-0.070
28	0.049	-0.041	0.140	0.027	0.036	0.107	0.117	0.001
29	-0.011	-0.082	0.082	0.103	0.011	0.026	0.128	-0.001
30	0.125	-0.016	0.207	0.139	0.019	-0.042	0.176	0.048
31	0.046	0.153	0.070	0.096	0.103	-0.161	0.000	0.021
32	0.178	0.095	0.121	0.097	0.109	0.116	0.115	0.186
33	0.171	0.033	0.017	-0.052	0.133	0.040	0.269	0.248
34	0.080	0.143	0.116	-0.038	0.053	0.109	-0.037	0.066
35	0.213	0.044	0.093	-0.020	0.159	0.208	0.202	0.139
36	0.122	0.068	0.283	-0.035	0.151	0.289	0.379	0.150
37	-0.068	0.105	0.186	-0.053	0.107	0.092	0.160	0.045
38	0.167	0.006	0.052	0.085	0.002	0.127	0.079	-0.084
39	-0.004	-0.042	0.113	0.195	-0.059	-0.086	0.013	0.129
40	0.042	0.083	0.136	0.026	0.024	-0.008	0.152	-0.055
41	-0.055	-0.185	0.132	0.192	-0.018	0.054	0.041	0.095

Table 1
(Continued)

Var	25	26	27	28	29	30	31	32
Mean	2.573	2.464	2.573	0.718	0.727	0.836	2.227	0.755
S.D.	0.582	0.585	0.598	0.509	0.487	0.479	0.725	0.693

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25	1.000							
26	-0.006	1.000						
27	0.341	0.309	1.000					
28	0.116	0.011	0.113	1.000				
29	0.200	0.061	0.163	0.427	1.000			
30	0.273	-0.021	0.042	0.223	0.357	1.000		
31	-0.094	-0.229	-0.007	-0.024	0.073	0.055	1.000	
32	0.079	-0.079	0.010	0.062	0.180	0.154	0.240	1.000
33	-0.072	0.044	0.088	0.019	0.126	0.114	0.080	0.206
34	-0.132	0.013	-0.083	-0.052	0.015	-0.076	-0.112	0.078
35	0.009	-0.113	-0.105	0.082	0.163	0.103	0.004	0.168
36	0.039	-0.013	0.120	0.272	0.181	0.189	-0.033	0.070
37	-0.023	0.050	0.188	0.168	0.128	0.078	0.073	0.094
38	0.104	-0.224	-0.022	0.140	0.160	0.281	0.048	0.248
39	-0.044	0.174	0.114	0.198	0.107	0.116	0.110	-0.001
40	0.110	0.006	0.274	-0.012	0.183	0.194	0.123	0.171
41	0.095	0.161	0.154	0.127	0.021	0.074	-0.069	0.203

Table 1
(Continued)

Var	33	34	35	36	37	38	39	40	41
Mean	1.336	0.518	2.545	2.218	0.282	0.445	2.218	1.309	1.936
S.D.	1.356	0.674	1.081	1.309	0.509	0.749	0.980	0.646	0.998

33	1.000								
34	0.018	1.000							
35	0.137	0.125	1.000						
36	0.144	0.079	0.415	1.000					
37	0.180	0.079	0.118	0.265	1.000				
38	-0.068	0.247	0.150	0.293	0.293	1.000			
39	-0.132	-0.020	-0.131	0.070	0.041	-0.109	1.000		
40	0.173	0.050	0.177	0.093	0.207	0.225	0.037	1.000	
41	-0.004	0.009	0.186	0.158	0.108	0.100	0.089	0.187	1.000

Table 2

Principal Components of 41 10th Grade RVP Item Intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12
Roots	4.74	2.47	2.19	2.16	1.88	1.67	1.63	1.57	1.51	1.44	1.31	1.28
% of Trace	11.57	6.02	5.35	5.27	4.58	4.08	3.97	3.82	3.69	3.50	3.20	3.13
Vector Weights for Variables												
1	.11	.22	-.25	-.14	.12	.05	.13	.01	-.09	.03	-.35	.06
2	.12	.28	-.16	.08	-.09	.05	.07	-.05	.23	-.20	-.30	.08
3	.17	.10	-.11	-.22	-.03	-.04	-.11	-.00	-.06	-.14	-.25	.04
4	.12	.09	-.21	-.05	-.26	-.19	.02	-.06	.12	-.02	.02	-.30
5	.16	.16	.08	.21	.14	-.16	.12	.11	.04	-.02	-.01	-.10
6	-.01	-.24	-.04	-.42	-.03	.02	.20	-.10	-.24	.09	-.15	-.02
7	.02	.01	-.09	.14	-.24	-.22	-.23	.02	-.37	.25	.11	-.11
8	.07	.17	-.29	-.13	-.09	-.25	-.01	.20	.13	.07	.17	.10
9	.20	.15	-.24	.00	-.17	-.18	-.01	-.04	.07	.04	-.16	.18
10	.20	.27	-.02	.06	-.02	.35	.10	-.01	-.13	-.17	.17	.11
11	.24	-.02	-.08	-.01	.08	-.10	.09	.18	.06	.03	.16	-.10
12	.19	-.12	-.03	.20	.14	-.01	-.08	-.34	-.14	-.18	.06	-.15
13	.18	-.02	.02	.23	-.01	-.08	.32	.01	-.34	-.08	-.05	-.06
14	.20	.13	.12	-.03	-.04	.34	.17	-.03	.08	-.06	.32	.09
15	.11	-.12	.02	-.14	.26	-.21	.25	-.11	.11	.06	.11	.31
16	.16	-.17	.13	.06	.30	-.02	-.09	-.06	.04	.20	-.08	.11
17	.06	-.23	-.00	.19	-.17	.05	-.01	-.00	.15	-.12	-.20	-.20
18	.07	-.18	-.03	.31	-.02	-.05	.18	-.09	-.23	.04	-.08	-.20
19	.25	.02	-.07	.13	-.11	.01	.00	-.12	-.12	-.11	.08	.22
20	.05	.08	.11	-.31	-.05	.23	.09	-.14	-.17	.28	.11	-.12
21	.16	-.07	-.17	.08	.02	.26	-.11	-.10	-.19	.07	-.09	.27
22	.14	-.17	-.27	-.30	.06	.01	-.11	.09	-.18	.01	.01	-.06
23	.25	-.07	-.07	.03	.15	.07	-.28	-.03	.01	.16	.01	.10
24	.16	-.06	-.28	-.09	.14	.12	-.03	-.12	.14	.24	-.05	-.31
25	.06	.12	.28	-.11	-.27	.04	-.21	.02	-.26	-.02	-.21	-.12
26	.00	.25	.12	-.05	.42	-.06	.06	.06	-.02	-.05	-.14	-.31
27	.12	.25	.28	.06	.15	-.11	-.19	.08	-.15	.21	-.14	.07

Table 2
(Continued)

	1	2	3	4	5	6	7	8	9	10	11	12
Vector Weights for Variables												
28	.19	-.01	.16	-.17	.01	-.23	-.11	-.24	.09	-.18	.13	.02
29	.16	-.03	.28	-.17	-.06	-.19	-.06	-.08	.22	-.00	-.10	-.10
30	.20	.03	.28	-.10	-.19	.16	-.02	-.18	.10	-.15	-.21	-.01
31	.06	-.04	.00	.18	-.27	-.01	.15	-.20	.19	.39	.11	.09
32	.19	-.12	.04	-.06	-.18	.17	.23	.09	.13	.21	-.03	-.16
33	.14	-.07	.02	.14	.16	.24	-.12	.09	.27	.26	-.15	-.12
34	.05	-.24	-.04	-.01	.13	-.04	.36	.16	-.09	-.20	-.12	-.03
35	.19	-.17	-.06	.01	-.03	.12	-.14	.26	.13	-.19	.09	-.17
36	.28	-.13	-.01	-.00	.04	-.09	-.25	.04	-.04	-.21	.21	-.07
37	.18	-.11	.11	.02	.11	-.15	-.05	.03	-.03	.09	-.04	.18
38	.13	-.29	.22	-.15	-.19	-.09	.09	.20	.05	-.09	-.06	.18
39	.08	.18	.05	-.06	.03	-.21	.20	-.41	.02	.05	.13	-.19
40	.19	.09	.14	.10	-.14	-.12	.16	.35	-.03	.23	-.14	.09
41	.15	.17	.10	-.12	.03	.06	.04	.31	-.12	.02	.30	-.17
Factor Pattern and Structure												
1	.24	.34	-.37	-.20	.17	.07	.16	.01	-.11	.03	-.40	.06
2	.25	.44	-.24	.12	-.13	.07	.09	-.07	.28	-.25	-.34	.09
3	.38	.15	-.17	-.33	-.04	-.05	-.14	-.00	-.08	-.17	-.28	.05
4	.25	.14	-.31	-.08	-.35	-.25	.02	-.07	.14	-.02	.03	-.34
5	.34	.25	.12	.31	.19	-.20	.15	.14	.05	-.02	-.01	-.11
6	-.03	-.38	-.06	-.61	-.04	.03	.25	-.13	-.30	.11	-.18	-.02
7	.05	.02	-.13	.20	-.32	-.29	-.30	.02	-.45	.30	.12	-.12
8	.15	.26	-.43	.19	-.12	-.33	-.01	.26	.16	.09	.19	.11
9	.44	.23	-.36	.01	-.23	-.24	-.01	-.06	.08	.04	-.18	.20
10	.44	.42	-.02	.09	-.02	.46	.13	-.01	-.16	-.20	.20	.13
11	.53	-.02	-.12	-.01	.11	-.13	.12	.22	.07	.04	.18	-.11
12	.42	-.19	-.05	.30	.19	-.01	-.10	-.42	-.17	-.22	.07	-.17
13	.39	-.03	.03	.34	-.01	-.11	.41	.01	-.42	-.09	-.06	-.06
14	.44	.21	.18	-.05	-.05	.44	.22	-.03	.10	-.07	.36	.10
15	.25	-.18	.03	-.20	.36	-.28	.32	-.14	.13	.08	.13	.36
16	.35	-.27	.19	.09	.41	-.03	-.11	-.07	.05	.24	-.10	.12
17	.13	-.37	-.00	.28	-.23	.07	-.02	-.00	.18	-.14	-.23	-.22

Table 2
(Continued)

	1	2	3	4	5	6	7	8	9	10	11	12
Factor Pattern and Structure												
18	.16	-.29	-.05	.45	-.03	-.06	.23	-.11	-.28	.05	-.09	-.23
19	.54	.04	-.10	.20	-.15	.01	.00	-.15	-.15	-.13	.09	.24
20	.11	.13	.17	-.46	-.06	.30	.11	-.18	-.20	.34	.12	-.13
21	.36	-.11	-.25	.12	.03	.34	-.14	-.13	-.24	.08	-.10	.31
22	.30	-.27	-.40	-.44	.08	.02	-.15	.11	-.22	.01	.02	-.07
23	.54	-.11	-.10	.04	.20	.09	-.36	-.04	.02	.19	.01	.12
24	.34	-.09	-.41	-.14	.19	.16	-.04	-.16	.17	.28	-.06	-.35
25	.13	.18	.42	-.16	-.36	.05	-.27	.03	-.31	-.02	-.24	-.14
26	.01	.40	.17	-.07	.57	-.07	.08	.08	-.02	-.05	-.16	-.35
27	.25	.39	.41	.09	.21	-.15	-.25	.10	-.19	.25	-.16	.08
28	.41	-.02	.23	-.24	.01	-.29	-.14	-.31	.11	-.22	.15	.03
29	.36	-.05	.41	-.25	-.09	-.24	-.07	-.11	.28	-.00	-.12	-.12
30	.43	.05	.41	-.14	-.26	.20	-.02	-.23	.12	-.18	-.24	-.02
31	.13	-.06	.00	.27	-.37	-.02	.19	-.25	.23	.47	.12	.10
32	.41	-.19	.05	-.09	-.25	.22	.29	.11	.15	.26	-.03	-.19
33	.30	-.11	.03	.21	.22	.31	-.16	.11	.33	.31	-.17	-.13
34	.12	-.38	-.06	-.01	.18	-.05	.46	.20	-.11	-.24	-.14	-.03
35	.42	-.27	-.09	.01	-.04	.15	-.18	.33	.16	-.23	.10	-.20
36	.61	-.21	-.02	-.00	.05	-.12	-.32	.05	-.05	-.25	.24	-.08
37	.40	-.18	.16	.03	.15	-.19	-.07	.03	-.03	.10	-.05	.21
38	.28	-.45	.33	-.22	-.26	-.11	.12	.25	.06	-.11	-.06	.20
39	.18	.28	.07	-.09	.04	-.27	.26	-.52	.02	.06	.15	-.22
40	.42	.13	.21	.15	-.19	-.15	.21	.44	-.04	.27	-.16	.10
41	.33	.27	.14	-.18	.04	.07	.05	.38	-.14	.02	.34	-.19

Table 3

Correlation Matrix for 44 Variables from the Career Development Study

Variables appear in the following order

1) through 8) are 8 interview scores collected in 1958

1 Factors to consider in curriculum choice
2 Factors to consider in occupational choice
3 Abilities (verbal statements about strengths and weaknesses,
4 Abilities (subject estimates his scholastic aptitude)
5 Abilities (rationale for decisions made in variable 4)
6 Interests
7 Values
8 Independence of choice

9) through 18) are additional scores originating in 1958

9 Age
10 IQ
11 Socio-economic status
12 Siblings
13 Father - educational level
14 Mother - educational level
15 Educational aspirations
16 Occupational choice
17 Sex
18 Curriculum

19) through 26) are 8 interview scores collected in 1961

19 Factors in curriculum choice
20 Factors in occupational choice
21 Abilities - 1
22 Abilities - 2
23 Abilities - 3
24 Interests
25 Values
26 Independence

27) through 38) are additional scores originating in 1961

27 Age
28 IQ
29 Socio-economic status
30 Siblings
31 Father - educational level
32 Mother - educational level
33 Educational aspirations
34 Occupational choice

Table 3
(Continued)

35 Extra curricular activities
36 Work experience
37 Sex
38 Curriculum

39) through 44) are 6 consistency and accessibility scores scaled in 1962.

39 Consistency of vocational preference in fields for 1958 data
40 Consistency of vocational preference in fields for 1961 data
41 Consistency of vocational preference in levels for 1958 data
42 Consistency of vocational preference in levels for 1961 data
43 Socio-economic accessibility of student preference for 1958 data
44 Socio-economic accessibility of student preference for 1961 data

Table 3
(Continued)

Var	1	2	3	4	5	6	7
Means	15.455	14.591	6.427	7.045	1.464	4.100	3.091
S.D.	6.239	4.583	3.271	1.410	1.226	2.203	2.535
1	1.000						
2	.474	1.000					
3	.407	.493	1.000				
4	.173	.094	.088	1.000			
5	.360	.136	.207	.093	1.000		
6	.218	.383	.328	.083	.144	1.000	
7	.448	.303	.390	-.042	.299	.216	1.000
8	.344	.296	.218	-.020	.157	.103	.248
9	.021	-.104	-.004	-.165	-.179	-.037	-.049
10	.274	.205	.161	.237	.505	.224	.200
11	-.133	-.063	-.166	-.113	-.219	-.326	-.066
12	-.021	-.022	-.022	.086	-.091	-.122	-.059
13	.181	.158	.205	.085	.245	.270	.024
14	.228	.148	.214	.131	.350	.258	.189
15	.352	.162	.233	.049	.301	.272	.332
16	-.306	-.079	-.149	-.110	-.294	-.233	-.146
17	-.182	-.019	-.201	.123	-.119	-.061	-.078
18	-.416	-.260	-.093	-.122	-.154	-.085	-.318
19	.364	.216	.257	.126	.059	.124	.129
20	.221	.292	.261	.013	-.054	.155	.136
21	.093	.082	.223	.134	-.120	.068	-.015
22	.043	-.057	-.017	.186	-.013	-.284	-.042
23	.274	.186	.321	.156	.139	.094	.318
24	.144	.096	.088	.140	.049	.248	.037
25	.269	.277	.285	.122	.097	.324	.225
26	.256	.191	.168	.210	.037	.133	.131
27	.021	-.104	-.004	-.165	-.179	-.037	-.049
28	.274	.205	.161	.237	.505	.224	.200
29	-.128	-.055	-.156	-.105	-.231	-.335	-.071
30	-.021	-.022	-.022	.086	-.091	-.122	-.059
31	.181	.158	.205	.085	.245	.270	.024
32	.228	.148	.214	.131	.350	.258	.189
33	.339	.168	.314	.174	.252	.278	.230
34	-.371	-.102	-.275	-.081	-.267	-.246	-.200
35	.249	.205	.195	.156	.189	.253	.188
36	.064	.059	.175	-.021	.037	.192	.095
37	-.182	-.019	-.201	.123	-.119	-.061	-.078
38	-.214	-.117	-.198	-.169	-.249	-.206	-.257
39	.080	.354	.181	.129	-.051	.138	.158
40	.112	.185	.056	.038	.151	.100	.122
41	.153	.244	.057	.128	-.087	-.096	.000
42	-.023	.078	.141	.077	.072	.143	.098
43	.155	.098	.054	-.029	-.127	-.022	.041
44	.106	.052	.136	-.069	-.143	.041	-.012

Table 3
(Continued)

Var	8	9	10	11	12	13	14
Means	4.355	160.	107.	3.927	1.982	3.118	3.027
S.D.	1.842	7.527	9.464	1.633	.904	1.934	1.516
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7							
8	1.000						
9	.046	1.000					
10	.088	-.412	1.000				
11	.084	.061	-.322	1.000			
12	.009	-.023	-.124	.159	1.000		
13	-.086	-.141	.428	-.723	-.129	1.000	
14	-.039	-.094	.291	-.524	.040	.647	1.000
15	.164	-.068	.234	-.393	.047	.312	.329
16	-.048	.194	-.295	.441	.105	-.360	-.368
17	.038	-.128	.037	.111	.020	-.051	-.078
18	-.147	.119	-.133	-.038	-.015	.102	.000
19	.188	-.003	.097	-.190	-.126	.152	.046
20	.131	.085	.029	.024	.030	.004	-.066
21	-.014	.046	.118	-.060	.040	.113	.130
22	.200	-.034	.067	.013	.068	-.054	-.004
23	.234	.078	.184	-.095	-.013	.061	.105
24	.016	.143	.068	-.023	-.022	-.039	-.157
25	.123	.151	.052	-.084	-.084	.048	.104
26	.294	.139	.039	-.110	.095	.025	.074
27	.046	1.000	-.412	.061	-.023	-.141	-.094
28	.088	-.412	1.000	-.322	-.124	.428	.291
29	.093	.068	-.332	.993	.170	-.718	-.528
30	.009	-.023	-.124	.159	1.000	-.129	.040
31	-.086	-.141	.428	-.723	-.129	1.000	.647
32	-.039	-.094	.291	-.524	.040	.647	1.000
33	.147	-.180	.305	-.370	-.080	.432	.398
34	-.093	.124	-.359	.413	.128	-.439	-.413
35	.111	-.018	.172	-.170	-.048	.197	.279
36	.054	.049	-.016	-.151	.118	-.011	.026
37	.038	-.128	.037	.111	.020	-.051	-.078
38	-.053	.063	-.248	.380	.069	-.393	-.419
39	.027	.074	-.015	.058	.064	-.019	-.061
40	.239	.077	.108	.097	.068	.011	-.023
41	.053	.070	-.099	.010	.099	.017	.021
42	.043	.161	-.014	-.026	.085	.095	.137
43	.231	.126	-.168	.451	.053	-.252	-.293
44	.141	.127	-.100	.392	.056	-.232	-.249

Table 3
(Continued)

Var	15	16	17	18	19	20	21
Means	5.155	2.673	1.491	1.655	20.891	18.282	8.327
S.D.	1.356	1.369	.500	1.124	4.337	4.187	3.188

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15	1.000						
16	-.736	1.000					
17	-.326	.354	1.000				
18	-.269	.204	-.006	1.000			
19	.181	-.243	-.189	-.241	1.000		
20	.002	-.019	.151	-.306	.259	1.000	
21	.047	-.061	-.072	-.138	.283	.326	1.000
22	-.013	-.055	.091	.001	.104	.011	-.005
23	.209	-.072	.030	-.098	.156	.262	.127
24	.063	-.142	-.083	-.061	.045	.326	.261
25	.188	-.151	-.069	-.114	.165	.409	.323
26	.116	-.092	-.076	-.142	.344	.211	.104
27	-.088	.194	-.128	.119	-.003	.085	.046
28	.234	-.295	.037	-.133	.097	.029	.118
29	-.383	.432	.099	-.045	-.173	.047	-.036
30	.047	.105	.020	-.015	-.126	.030	.040
31	.312	-.360	-.051	.102	.152	.004	.113
32	.329	-.368	-.078	.000	.046	-.066	.130
33	.622	-.591	-.245	-.177	.374	.054	.146
34	-.624	.660	.342	.192	-.409	-.023	-.185
35	.191	-.145	.139	-.099	.351	.163	.095
36	.131	-.172	-.230	-.081	.036	.233	.043
37	-.326	.354	1.000	-.006	-.189	.151	-.072
38	-.315	.348	-.104	.046	-.263	-.159.	-.036
39	.006	.085	.205	-.031	-.101	.251	-.083
40	.036	-.073	.149	-.180	.152	437	-.028
41	.041	.017	.011	-.033	-.119		-.181
42	-.099	.045	.088	-.091	.096	.417	.080
43	.180	-.198	-.036	-.171	.074	.164	.001
44	.083	-.000	-.098	-.117	.276	.177	.161

Table 3
(Continued)

Var	22	23	24	25	26	27	28
Means	7.609	2.282	4.836	5.491	5.464	191.	107.
S.D.	1.214	1.097	2.011	2.518	1.677	7.527	9.464

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22	1.000						
23	.206	1.000					
24	-.067	.136	1.000				
25	-.006	.325	.235	1.000			
26	.259	.231	.084	.189	1.000		
27	-.034	.078	.143	.151	.139	1.000	
28	.067	.184	.068	.052	.039	-.412	1.000
29	.026	-.077	-.005	-.073	-.100	.068	-.332
30	.068	-.013	-.022	-.084	.095	-.023	-.124
31	-.054	.061	-.039	.048	.025	-.141	.428
32	-.004	.105	-.157	.104	.074	-.094	.291
33	.037	.227	.070	.066	.240	-.180	.305
34	.038	-.247	-.051	-.057	-.177	.124	-.359
35	.145	.064	.051	.203	.301	-.018	.172
36	-.071	.083	.131	.177	.094	.049	-.016
37	.091	.030	-.083	-.069	-.076	-.128	.037
38	-.034	-.191	-.129	-.145	-.141	.063	-.248
39	-.027	.054	.050	.080	.182	.074	-.148
40	.048	.111	.187	.149	.186	.077	.108
41	.132	-.001	-.079	-.204	.104	.070	-.099
42	.070	.094	.018	.083	.151	.161	-.014
43	-.050	.005	.167	.005	-.047	.126	-.168
44	-.137	.119	.086	-.036	-.006	.127	-.100

Table 3
(Continued)

Var	29	30	31	32	33	34	35	36
Means	3.945	1.982	3.118	3.027	4.982	2.936	.827	1.282
S.D.	1.645	.904	1.934	1.516	1.265	1.245	.699	.728

29	1.000							
30	.170	1.000						
31	-.718	-.129	1.000					
32	-.528	.040	.647	1.000				
33	-.359	-.080	.432	.398	1.000			
34	.402	.128	-.439	-.413	-.826	1.000		
35	-.182	-.048	.197	.279	.387	-.357	1.000	
36	-.139	.118	-.011	.026	.015	-.050	-.047	1.000
37	.099	.020	-.051	-.078	-.245	.342	.139	-.230
38	.369	.069	-.393	-.419	-.529	.453	-.333	.048
39	.060	.064	-.019	-.061	-.081	.157	.054	.047
40	.112	.068	.011	-.023	.118	-.054	.215	.064
41	.009	.099	.017	.021	-.006	.097	-.014	-.001
42	-.013	.085	.095	.137	.087	-.087	.209	.097
43	.451	.053	-.252	-.293	.008	-.027	-.050	.007
44	.413	.056	-.232	-.249	.216	-.286	.113	-.025

Table 3
(Continued)

Var	37	38	39	40	41	42	43	44
Means	1.491	1.691	.845	.945	1.100	1.018	1.655	1.555
S.D.	.500	.932	.741	.724	1.035	.831	1.187	1.100

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37	1.000							
38	-.104	1.000						
39	.205	.062	1.000					
40	.149	-.281	.171	1.000				
41	.011	.023	.494	.056	1.000			
42	.088	-.239	.197	.470	.135	1.000		
43	-.036	.101	.136	.158	.050	-.040	1.000	
44	-.098	-.010	-.006	.175	-.025	.178	.620	1.000

Table 4

Principal Components of 8th Grade 8 RVP Variables
Correlations (collected in 1958)

Roots	2.848	1.068
% of Trace	35.60	13.35
Vector Weights for Variables		
Factors in Curriculum Choice	.455	-.013
Factors in Occupational Choice	.431	.124
Verbalized Strengths and Weak's	.424	.081
Accuracy of Self Appraisals	.101	.803
Evidence for Self Ratings	.285	-.079
Interests	.308	.300
Values	.390	-.313
Independence of Choice	.297	-.373
Factor Pattern and Structure		
Factors in Curriculum Choice	.768	-.013
Factors in Occupational Choice	.728	.128
Verbalized Strengths and Weak's	.716	.084
Accuracy of Self Appraisals	.171	.830
Evidence for Self Ratings	.482	-.081
Interests	.519	.310
Values	.659	-.324
Independence of Choice	.501	-.385

Table 5

Principal Components of 10th Grade RVP Variables
Correlations (collected in 1961)

Roots	2.428	1.344
% of Trace	30.35	16.80
Vector Weights for Variables		
Factors in Curriculum Choice	.345	-.244
Factors in Occupational Choice	.457	.196
Verbalized Strengths and Weak's	.381	.255
Accuracy of Self Appraisals	.123	-.623
Evidence for Self Ratings	.353	-.212
Interests	.303	.400
Values	.430	.186
Independence of Choice	.333	-.458
Factor Pattern and Structure		
Factors in Curriculum Choice	.538	-.283
Factors in Occupational Choice	.711	.228
Verbalized Strengths and Weak's	.593	.295
Accuracy of Self Appraisals	.191	-.722
Evidence for Self Ratings	.551	-.246
Interests	.472	.463
Values	.671	.216
Independence of Choice	.518	-.530

Table 6

Multiple Correlation of 8th Grade 8 RVP Variables with 1961 Occupational Choice Level

RVP Variables	1	2	3	4	5	6	7	8	9
Factors in Curriculum Choice	1.0	.474	.408	.173	.360	.218	.448	.344	-.371
Factors in Occupational Choice		1.0	.493	.094	.136	.383	.303	.296	-.102
Verbalized Strengths and Weak's			1.0	.088	.207	.328	.390	.218	-.275
Accuracy of Self Appraisals				1.0	.093	.083	-.042	-.020	.081
Evidence for Self Ratings					1.0	.144	.299	.157	-.267
Interests						1.0	.217	.103	-.246
Values							1.0	.248	-.200
Independence of Choice								1.0	-.093
Occupational Choice Level									1.0

Multiple R Square = .251 N.D.F.1 = 8. F for Analysis of Variance on R = 4.233

Multiple R = .501 N.D.F.2 = 101. P is less than .001

	Beta Weights	Proportion of Variance from each Predictor
Factors in Curriculum Choice	-.377	.140
Factors in Occupational Choice	.214	-.022
Verbalized Strengths and Weak's	-.179	.049
Accuracy of Self Appraisals	.174	.014
Evidence for Self Ratings	-.133	.035
Interests	-.199	.049
Values	.054	-.011
Independence of Choice	.044	-.004

Table 7

Multiple Correlation of 10th Grade 8 RVP Variables with 1961 Occupational Choice Level

RVP Variables	1	2	3	4	5	6	7	8	9
Factors in Curriculum Choice	1.0	.259	.283	.104	.156	.045	.165	.345	-.409
Factors in Occupational Choice		1.0	.326	.011	.262	.326	.409	.211	-.023
Verbalized Strengths and Weak's			1.0	-.005	.127	.261	.323	.104	-.185
Accuracy of Self Appraisals				1.0	.206	-.067	-.006	.259	.038
Evidence for Self Ratings					1.0	.136	.325	.231	-.247
Interests						1.0	.235	.084	-.051
Values							1.0	.189	-.057
Independence of Choice								1.0	-.177
Occupational Choice Level									1.0

Multiple R Square = .250 N.D.F.1 = 8. F for Analysis of Variance on R = 4.206

Multiple R = .500 N.D.F.2 = 101. P is less than .001

	Beta Weights	Proportion of Variance from each Predictor
Factors in Curriculum Choice	-.388	.159
Factors in Occupational Choice	.169	-.004
Verbalized Strengths and Weak's	-.108	.020
Accuracy of Self Appraisals	.141	.005
Evidence for Self Ratings	-.252	.062
Interests	-.030	.002
Values	.074	-.004
Independence of Choice	-.058	.010

Table 8

Multiple Correlation of 10th Grade 8 RVP Variables with 1961 Socio-Economic Status of Family

RVP Variables	1	2	3	4	5	6	7	8	9
Factors in Curriculum Choice	1.0	.259	.283	.104	.156	.045	.165	.345	-.173
Factors in Occupational Choice		1.0	.326	.011	.262	.326	.409	.211	.047
Verbalized Strengths and Weak's			1.0	-.005	.127	.261	.323	.104	-.036
Accuracy of Self Appraisals				1.0	.206	-.067	-.006	.259	.026
Evidence for Self Ratings					1.0	.136	.325	.231	-.077
Interests						1.0	.235	.084	-.005
Values							1.0	.189	-.073
Independence of Choice								1.0	-.100
Socio-Economic Status of Family									1.0

Multiple R Square = .056 N.D.F.1 = 8. F for Analysis of Variance on R = .749
The Multiple Correlation is not
Multiple R = .237 N.D.F.2 = 101. Significantly Different from Zero.

	Beta Weights	Proportion of Variance from each Predictor
Factors in Curriculum Choice	-.179	.031
Factors in Occupational Choice	.154	.007
Verbalized Strengths and Weak's	.005	-.000
Accuracy of Self Appraisals	.070	.002
Evidence for Self Ratings	-.066	.005
Interests	-.014	.000
Values	-.072	.005
Independence of Choice	-.059	.006

Table 9

Multiple Correlation of 8th Grade 8 RVP Variables with 1958 Otis I.Q.

RVP Variables	1	2	3	4	5	6	7	8	9
Factors in Curriculum Choice	1.0	.474	.408	.173	.360	.218	.448	.344	.274
Factors in Occupational Choice		1.0	.493	.094	.136	.383	.303	.296	.205
Verbalized Strengths and Weak's			1.0	.088	.207	.328	.390	.218	.161
Accuracy of Self Appraisals				1.0	.093	.083	-.042	-.020	.237
Evidence for Self Ratings					1.0	.144	.299	.157	.505
Interests						1.0	.217	.103	.224
Values							1.0	.248	.200
Independence of Choice								1.0	.088
Otis I.Q.									1.0

Multiple R Square = .319 N.D.F.1 = 8. F for Analysis of Variance on R = 5.923

Multiple R = .565 N.D.F.2 = 101. P is less than .001

	Beta Weights	Proportion of Variance from each Predictor
Factors in Curriculum Choice	.025	.007
Factors in Occupational Choice	.092	.019
Verbalized Strengths and Weak's	-.049	-.008
Accuracy of Self Appraisals	.178	.042
Evidence for Self Ratings	.454	.229
Interests	.115	.026
Values	.033	.007
Independence of Choice	-.025	-.002

Table 10

Multiple Correlation of 10th Grade 8 RVP Variables with 1958 Otis I.Q.

RVP Variables	1	2	3	4	5	6	7	8	9
Factors in Curriculum Choice	1.0	.259	.283	.104	.156	.045	.165	.345	.097
Factors in Occupational Choice		1.0	.326	.011	.262	.326	.409	.211	.029
Verbalized Strengths and Weak's			1.0	-.005	.127	.261	.323	.104	.118
Accuracy of Self Appraisals				1.0	.206	-.067	-.006	.259	.067
Evidence for Self Ratings					1.0	.136	.325	.231	.184
Interests						1.0	.235	.084	.068
Values							1.0	.189	.052
Independence of Choice								1.0	.039
Otis I.Q.									1.0

Multiple R Square = .053 N.D.F.1 = 8. F for Analysis of Variance on R = .701

Multiple R = .229 N.D.F.2 = 101. Insignificant

	Beta Weights	Proportion of Variance from each Predictor
Factors in Curriculum Choice	.068	.007
Factors in Occupational Choice	-.066	-.002
Verbalized Strengths and Weak's	.098	.012
Accuracy of Self Appraisals	.034	.002
Evidence for Self Ratings	.181	.033
Interests	.048	.033
Values	-.029	-.001
Independence of Choice	-.030	-.001

Table 11

Correlations of 8th Grade 8 RVP Variables (1958)
With 10th Grade 8 RVP Variables (1961)

8th (1958) RVP	Cross Correlations: 10th (1961) RVP 1	2	3	4	5	6	7	8
Factors in Curriculum Choice	.364	.221	.093	.043	.274	.144	.269	.256
Factors in Occupational Choice	.216	.292	.082	-.057	.186	.096	.277	.191
Verbalized Strengths and Weak's	.257	.261	.223	-.017	.321	.088	.285	.168
Accuracy of Self Appraisals	.126	.013	.134	.186	.156	.140	.122	.210
Evidence for Self Ratings	.059	-.054	-.120	-.013	.139	.049	.097	.037
Interests	.124	.155	.068	-.284	.094	.248	.324	.133
Values	.129	.136	-.015	-.042	.318	.037	.225	.131
Independence of Choice	.188	.131	-.014	.200	.234	.016	.123	.294

Table 12

Canonical Correlation Analysis of 8th (1958) 8 RVP Variables
and 10th (1961) 8 RVP Variables

First Canonical

Λ	χ^2	ndf	p	R_c^2	R_c
.356	115	64	<.001	.343	.586

8th RVP Weights		10th RVP Weights	
Factors in Curriculum Choice	.543	Factors in Curriculum Choice	.512
Factors in Occupational Choice	.028	Factors in Occupational Choice	.040
Verbalized Strengths and Weak's	.329	Verbalized Strengths and Weak's	-.127
Accuracy of Self Appraisals	.272	Accuracy of Self Appraisals	-.268
Evidence for Self Ratings	-.140	Evidence for Self Ratings	.458
Interests	.456	Interests	.220
Values	.201	Values	.501
Independence of Choice	.230	Independence of Choice	.372

Second Canonical

Λ	χ^2	ndf	p	R_c^2	R_c
.542	68.4	49	<.001	.230	.480

8th RVP Weights		10th RVP Weights	
Factors in Curriculum Choice	.035	Factors in Curriculum Choice	.041
Factors in Occupational Choice	-.148	Factors in Occupational Choice	.032
Verbalized Strengths and Weak's	.317	Verbalized Strengths and Weak's	.283
Accuracy of Self Appraisals	.451	Accuracy of Self Appraisals	.783
Evidence for Self Ratings	-.162	Evidence for Self Ratings	.288
Interests	-.815	Interests	-.244
Values	-.012	Values	-.380
Independence of Choice	.544	Independence of Choice	.134

Table 13

Correlated-Samples, t Tests for 110 Subjects' 10th RVP Scores Minus 8th RVP Scores

Number of degrees of freedom for each t test is 109.

p = .05 , t = 2.36
p = .01 , t = 2.62
p = .001, t = 3.37

Variable	Mean Difference	t
Factors in Curriculum Choice	5.44	9.20
Factors in Occupational Choice	3.69	7.37
Verbalized Strengths and Weak's	1.90	4.93
Accuracy of Self Appraisals	.56	3.50
Evidence for Self Ratings	.82	5.60
Interests	.74	2.97
Values	2.40	7.97
Independence of Choice	1.11	5.53