A STUDY OF THE RELATIONS BETWEEN TENTATIVE OCCUPATIONAL CHOICE-VOCATIONAL INTERESTS CONGRUENCY AND SELECTED VARIABLES

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A STUDY OF SELECTED PREDICTOR VARIABLES FOR SCHOLASTIC APTITUDE-VOCATIONAL INTERESTS CONGRUENCY WITH VOCATIONAL EXPECTATIONS

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ABSTRACT

A STUDY OF THE RELATIONS BETWEEN TENTATIVE OCCUPATIONAL CHOICE-VOCATIONAL INTERESTS CONGRUENCY AND SELECTED VARIABLES

This was an investigation of one dimension of realism of older boys' tentative occupational choice: congruency of vocational interests and tentative occupational choice. The study's main purpose was to test the hypothesis that there are positive relations between tentative occupational choice-vocational interests congruency and each of the following variables: (1) knowledge of one's scholastic ability, (2) knowledge of one's vocational interests, (3) use of friends, teachers, school, books and magazines, and work experience as sources of information when making an occupational choice, (4) number of sources of occupational information used, (5) number of visits to counselor, (6) social class, and (7) prudentness.

This hypothesis was based upon research and theory concerning occupational choice and vocational interests, particularly that of E. Ginzberg and his associates.

The sample consisted of 224 male eleventh graders enrolled in the Berkeley High School. The school is located in the San Francisco-Oakland Bay Area. Respondents with a Differential Ratio of +2 or higher for the Kuder Preference Record-Occupational Form D key matching their tentative

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occupational choice were assigned to a "congruent" subsample (N=46). Respondents with a DR of -2 or lower comprised an "incongruent" sub-sample (N=41). Comparison of the sub-samples with the rest of the sample of 224 boys showed that most of the latter were students who chose lowstatus vocations for which no KPR-O keys were available.

The constructs in the hypothesis were operationalized as follows: (1) occupational-choice interests congruency: DR from the KPR-O keys matching each tentative occupational choice; (2) scholastic ability: School and College Ability Test, Level 2; (3) knowledge of scholastic ability: ratings of how well respondents' self-rating of their scholastic ability matched their SCAT scores; (4) knowledge of vocational interests: rating of how well each respondent's self-rating of interests matched his KPR-O score; (5) social class: Edwards' and Wilson's system of occupational categories; (6) prudentness: modification of Edwards' and Wilson's prudent-immediate scale; and (7) types of information sources and number of counselor visits and information sources: questionnaire.

The existence of certain hypothesized relations were tested by analyzing the data to determine if congruency of occupational choice and interests varies directly with the other variables being studied. For instance, if boys who are high on congruency are also high with regard to frequency of visits to their counselor, it was concluded that a relation exists between the two variables, providing the

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boys in the two sub-samples were found to differ with regard to the number of such visits.

The Kolmogorov-Smirnov test was employed to determine if the congruent group were stochastically higher than the incongruent group in terms of the following five variables (alpha = .05): (1) Estimation of vocational interests: D = .403 is in predicted direction and statistically significant. (2) Estimation of scholastic ability: D = .085is in predicted direction and not significant. (3) Number of information sources: D = .301 is in the predicted direction and significant. (4) Frequency of counselor visits: D = .125 is in the expected direction and not significant. (5) Social class: D = .446 is in the direction predicted and significant.

A <u>t</u> test was used to test the reliability of the difference between mean prudentness scores for congruent and incongruent groups (alpha = .01). The difference of 4.219 is statistically significant.

The difference-between-proportions test was used to determine the reliability of the difference between the proportion of the congruent group and the incongruent group which reported "school" as their most important source of information (alpha = .05). The obtained \underline{z} for the difference is 1.735 and is significant.

The findings supported the hypothesis for variables 2, 4, 6, and 7 only. The results only supported the hypothesis for variable 3 as it pertains to "school".

A STUDY OF THE RELATIONS BETWEEN TENTATIVE OCCUPATIONAL CHOICE-VOCATIONAL INTERESTS CONGRUENCY AND SELECTED VARIABLES

В**у**

Leonard W. Phillips

A THESIS

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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CHAPTER I

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Statement of the Problem

For a long time educators, social scientists and guidance workers have given serious attention to realism or appropriateness of older boys' occupational choice. Although they have succeeded in increasing our knowledge about the matter, the literature concerning it indicates that there are many important things we still do not know about realism of occupational choice.

This is an investigation of one dimension of the phenomenon: congruency of vocational interests and tentative occupational choice. The study's purpose is to test certain hypotheses and to answer selected questions concerning the relations between occupational choice-interests congruency and each of the following variables: (1) estimation of one's scholastic ability and interests, (2) selected attitudinal traits, (3) knowledge of one's self and of occupations, and (4) apparent crystallization of occupational choice.

The study is an analysis of data collected from a sample of eleventh-grade boys. The analysis is designed to test certain hypotheses and to answer selected questions

concerning the population from which the sample was drawn.

The problem with which this investigation deals is both real and educationally significant. It stems from the vocational preparation role of education in American society. Brookover and Gottlieb (1964) cite public opinion surveys showing the public believes vocational preparation to be one of the primary functions of schools. Educational institutions have other roles which are ancillary to this general function.

Warner, Havighurst, and Loeb (1944) and Gross, Wronski, and Hansen (1962) have described how the schools act as a sorting and selecting agency. Schools, according to these authors, assign students to various curricular programs thus greatly influencing the students' subsequent station in life. Brookover and Gottlieb (1964) have pointed out how education serves to mitigate social inequities by providing compensatory education. Our schools actually perform both of these functions simultaneously, and this explains, in part at least, the vocational guidance service which all school systems provide in one form or another. The service has been conceptualized by Warner, Havighurst, and Loeb (1944, p. 163) as follows:

The best solution of this problem, [i.e., guiding adolescents into appropriate courses of study] seems to lie in establishing a scientific and honest guidance program. The student's aptitudes, abilities, and expectations in life should be > assessed and considered by wise and well trained counselors who should then give the student and his parents their honest and frank advice.

Most studies of vocational preferences (e.g., Ryan, 1953; Mehenti, 1954; Reisner, 1956) show that a high proportion of students have preferences which are unrealistic. However, the researchers cited are by no means in agreement as to what this proportion is, and it is possible to find evidence (Lockwood, 1958) indicating that high school students have remarkably realistic occupational preferences.

Few people would not agree that vocational guidance is more scientific and objective than it was when <u>Who Shall</u> <u>Be Educated?</u> was written. New measuring instruments to help the guidance worker are continually being developed and improved. The Occupational Form D of the Kuder Preference Record is an example of one of these instruments. Although the KPR-O has been on the market for a number of years, nothing appears to have been published regarding its use with high school youngsters.

In focusing upon congruency between the vocational interests and plans of high school boys, it was necessary to ignore certain dimensions of realism of vocational choice. Girls were omitted from the sample because their inclusion would have precluded use of the Kuder Preference Record in the study. This inventory can be used only with male respondents. The matter of vocational preferences, i.e., what occupation the students would like to enter, is also not part of the study. Considerable evidence (Trow, 1941; Gilger, 1942; Porter, 1954; Stephenson, 1957a, 1957b) indicates that vocational choices and preferences are not the

same thing. Like Holloway and Berreman (1959), this investigator feels that choices are more significant than preferences.

A molar analysis of realism of tentative vocational choice would necessarily include such variables as mental ability, existing opportunities in the occupational structure, and general aptitudes. At the present time, there are no tests with up-to-date occupational norms available for measuring vocational aptitudes or mental abilities. It is very difficult to make objective and reliable assessments of vocational choices in terms of the current labor market.

Definition of Terms

Tentative occupational choice.--This term denotes the vocational plans or expectations youth have at the end of the "tentative period of occupational choice". This period has been described by Ginzberg <u>et al</u>. (1951, p. 186) as follows:

The tentative period is characterized by the individual's recognition of the problem of deciding on a future occupation. The solution must be sought in terms of future probable satisfactions. During this period, however, the translation is almost exclusively in terms of subjective factors: interests, capacities, and values. In fact, as most individuals reach the end of this period, they recognize that their approach has been too subjective. They, therefore, consider their choices tentative, for they realize that an effective resolution requires the incorporation of reality considerations and this will be possible only on the basis of additional experience.

Inventoried vocational interests. -- The phrase refers

to the interests which are measured by such standardized instruments as the Strong Vocational Interest Blank, the Kuder Preference Record-Vocational, and the Allport, Vernon, Lindzey Study of Values. This usage is from Super (1947, p. 376).

<u>Tentative occupational choice-vocational interests</u> <u>congruency</u>.--This is the agreement between a respondent's inventoried vocational interests and his tentative occupational choice.

Attitudinal traits.--These are personality traits which approach being attitudes. According to Allport (1937, p. 419), they are,". . . modes of adjustment through which the person orients himself to some specifiable aspect of his situation."

<u>Prudentness</u>.--This attitudinal trait is a consistent tendency to approach decisions or actions regarding social objects in one's environment analytically and deliberately. Edwards and Wilson (1958, p. 281), in describing the trait's cognitive dimension, have written, "deliberation involves the consideration of alternate forms of action, the evaluation of the possible consequences, and the subordination of immediate ends to long run values." The affective dimension of prudency denotes an intrinsic interest in the humanities and social sciences.

<u>Immediateness</u>.--According to Edwards and Wilson (1958, p. 280), it is the disposition to make social decisions and take social action on the basis of, "the most proximate clues or associations." Immediateness denotes an impulsion toward action, an intolerance for ambiguity and a propensity for extrinsic rewards.

Work and pleasure attitudinal traits.--These two contrasting traits have been defined by Ginzberg <u>et al</u>. (1951, pp. 208-209) as follows:

Such a sharp dichotomy does not imply that the work-oriented person has little interest in attaining current sensual satisfaction. . . The difference lies in what the individual considers the center of his life, the force which gives him direction, in other words, his dominant values.

The most reliable criterion to distinguish between the work- and pleasure-oriented individual is the ease with which an individual can be deflected from his present work and his plans for the future.

While the work-oriented person attempts to find expression for his inner drives and to realize himself through his work, the pleasureoriented individual appears to be much more sensitive to the range of satisfactions outside the work sphere.

Active and passive attitudinal traits.--These terms are also used as they have been defined by Ginzberg <u>et al</u>. (1951, pp. 208, 210-11) as follows:

We are using these terms [active and passive] merely to indicate a distinction between individuals who approach the problem of making an occupational choice by "actively" seeking to find the best answer, and those who seem to reach a resolution largely by a "passive" response in which outside forces and influences propel them to a choice.

A more fundamental distinction [between active and passive persons] is the intensity of concern. The active person seeks a deeper understanding of the essential elements in his own personality--interests, capacities, and values--to which he desires to give expression in his occupational choice. The passive individual acts as if he assumed the occupational choice either would be made for him by someone else . .

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or would be the more or less inevitable outcome of current experiences and exposures. He seems to believe there is relatively little he can do to determine the outcome. When an opportunity is offered, he may grasp it, but he will do little to create one. To the observer he may appear to be floundering.

<u>Social class</u>.--The following definition from Ellis (1959) will be used: "Persons of similar social rank in a community or a society who are socio-culturally demarcated from other aggregates of dissimilar social rank."

<u>Occupational categories</u>.--These are discrete social categories comprised of various occupations. Such categories permit us, ". . . to compare highly disparite occupations and think of them as approximately equal in pres-tige, such as a newspaper columnist, electrician and bookkeeper." This conceptualization was taken from Kahl (1957, p. 77).

Realistic occupational choice.--This is the type of decision which, according to Ginzberg and his associates (1951, pp. 95-117), youth usually make during the realistic period. Young people typically crystallize their occupational choice before the close of this period. During the realistic period, youth give increasing attention to the realistic of the world of work as youth perceive them in relation to their individual values, interests and aptitudes. The typical vocational plan which young people have at this time is the result of their ability to make a compromise between external reality and internal values, interests, and capabilities.

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In this study the phrase "realistic occupational choice" is shorn of its original developmental meaning, unless otherwise indicated. The phrase is used to denote the compromise process described above, and the concept is applied to the study of tentative occupational choice rather than the more general problem of occupational choice.

Crystallization and apparent crystallization of occupational choice.--Ginzberg et al. (1951, pp. 107-108)

have defined the terms as follows:

Crystallization is the process whereby the individual is finally able to synthesize the many forces, internal and external, that have relevance for his decision. The actual process cannot be observed save in retrospect; this is true not only for the observer, but for the individual. It is a commitment, and the individual recognizes this by his willingness to bring his explorations to a close and by his ability to make definite plans for the future, subject to change in details. This firmness of commitment differentiates an actual crystallization from the apparent one of the fifteenand sixteen-year olds. The high school junior has seldom had an opportunity to test the strategic elements in his tentative choice and has therefore been unable to weigh its appeal for him. Moreover, he has not yet confronted the wide range of alternatives that will probably open in college. Of course, his

tentative choice may remain the final one, but he cannot determine this without considerable exploration.

Occupational key.--This is similar to the scoring key which commonly accompanies standardized achievement tests, for instance. Occupational keys, unlike achievement test keys, are not constructed on the basis of the test maker's notion of the correct response to each test item. Occupational keys are made in such a way that the most popular answer to an item, among a sample of the members of

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a particular occupation, constitutes the "correct response" to the item. The number of keys which are available for use with a particular inventory will depend upon the number of occupations sampled in the standardization of the instrument.

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CHAPTER II

BACKGROUND RESEARCH

The Extent of Realism of Vocational Choice Among Adolescents

When Byrns (1939) and Stephenson (1957a; 1957b) compared the vocational expectations of secondary school boys with the distribution of workers in the occupational structure, both investigators found this: (1) the percentage of boys planning to enter the professions was much greater than the percentage of professionals in the working force, and (2) the ratio was reversed for the unskilled, semi-skilled and skilled occupations. Carp (1949) reported that only 29 per cent of the high school boys he studied expected to enter their father's occupation. Youmans' (1954, 1956) data, from a very large sample of Michigan high school males, show that a great many boys with fathers who are manual workers expect to avoid manual-type work themselves. Although it is very difficult to measure intergenerational mobility, the NORC data presented by Kahl (1957) indicate that the boys' expectations are more san-Suine than realistic. Examination of Stephenson's, Carp's, Byrns' and Youmans' findings suggest that there are a great number of older boys who have occupational plans out of

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line with available opportunities.

Byrns (1939), using a sample of all the high school seniors in Wisconsin, also investigated the distribution of scholastic ability scores among students expecting to enter various occupational groups. She uncovered substantial numbers of respondents whom she concluded did not possess the necessary ability for the work of their choice. Jones (1940), having noted that graduating high school students plan to enter mostly those positions at the top of the occupational hierarchy, correlated a measure of his respondents' academic achievement with their expected occupation's prestige rating. He obtained an <u>r</u> for the boys of only .20. Both these studies have been used to show that there is a substantial proportion of older adolescent boys whose intellectual ability is not congruent with their occupational plans.

The questionnaire-type studies just reviewed obscure the fact that in recent years a high proportion of lower-class, male youth have occupational aspirations which are unrealistically low. This assertion is based upon consideration both of the manner in which the studies' results were obtained and of recent changes in the nation's occupational structure. Ginzberg and his associates (1951, P. 155), after intensive interviews with seventeen lowerclass, male youth, concluded that almost all their vocational expectations were "passive and stunted". Dresden (1948) presents a plausable explanation of why Ginzberg's
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results depart so much from the general picture of overaspiration among youth. She asserts that, on the basis of her experience as a high school counselor, interviews with lower-class students elicit much more modest vocational aspirations than do questionnaires. Mills (1951) and Kahl (1957) have presented well-documented descriptions of the tremendous expansion of lower-echelon, white-collar positions in American society. Part of this expansion is the result of industry's demand for electronic technicians, engineers helpers, draftsmen, and many other semi-professional workers. When one looks at both the depressed vocational expectations of lower-class boys and the current occupational opportunities which exist, it appears that this group has plans which are unrealistic, but in a way which departs from the usual use of the term.

Lockwood (1958) contends the survey method used in the studies just reviewed have a serious weakness: they tell us little about the decisions of individuals, only of groups. Among almost any group of adolescents expecting or wanting to enter a major profession, for instance, there will be some who are qualified and some who are not. It would be wise for some youths to enter a less prestigeful and demanding occupation than their father's while the op-Posite would be true for talented lower-class boys. Studies of individual cases are needed, therefore, to find Possible sources of rational planning in this area. Most of the recent research (Lockwood, 1958; Ryan, 1953; Super

and Oste . have toys alis 111 Derl • 9j o •~ 1.16 tezt • Ine? late 5 F teng • 1210 27 19:5 **ئۇرىچ** . ltic: • NE) --ite j • i, • 11 Reg. and Overstreet, 1960; Mehenti, 1954; Reisner, 1956; Ostermann, 1962) about realism in occupational decisions have employed this method.

Mehenti (1954) reported a study of 124 ninth-grade boys which provides objective evidence of the extent of realism of vocational choice among adolescents. Using a simplified version of the Strong Vocational Interest Blank and Darley's (1941) rating method. Mehenti was able to classify 93 of her respondents as follows: 40 per cent had interests like those of men in each boy's preferred occupation; 22 per cent probably had interests similar to members of each boy's preferred occupation; and 38 per cent did not have the same interests. One may conclude that somewhere between 40 and 62 per cent of the boys had appropriate preferences, using congruency of vocational preference with interests as an index of realism. Some of the students classed as probably having interests like those of men in the students' selected occupation are very likely not to possess such interests.

A study by Lockwood (1958) suggests that when high school seniors are classified as either realistic or unrealistic on the basis of a number of criteria, the results are much different from Mehenti's. Lockwood used a random sample of 508 students graduating from the academic secondary schools in Baltimore. His judges used criteria, such as mental ability, grade-point average, and work experience, which only indicate how well an individual is suited for an

occupation. No attempt was made to include employment opportunities as a criterion. Ninety-five per cent of the students were considered to have realistic preferences and only five per cent unrealistic preferences.

The extremely high proportion of appropriate preferences found by Lockwood can probably be explained in two ways. First, the counselors' ratings were contaminated by their knowledge of the students' ability. Second, there was a ceiling effect operating which made the results partly an artifact of the study's design. The second interpretation is based on the assumption that the lack of realism of vocational preference found in surveys is largely the result of students' aspiring to the most prestigeful occupations. It also assumes that the youth of Baltimore who graduate from the city's academic high schools are the public school students most likely to qualify for the top-ranked occupations. In short, it would be more difficult for this group to over-aspire than any other group of public school graduates in the city.

The Lockwood and Mehenti studies illustrate certain weaknesses and strengths found in investigations of appropriateness of vocational choice involving the rating of individuals. Mehenti used a limited measure of realism of vocational preference but her use of the Strong Vocational Interest Blank made it possible to interpret her results. Lockwood's measure of the same variable is more molar, less atomistic, but it is difficult to interpret his results.

This is partly due to his clinical-type method of classifying his respondents and is partly due to other weaknesses in his research design.

Research on the Correlates of Realism of Vocational Choice

This review includes studies of students in both secondary schools and colleges. The literature centers around the following correlates: knowledge about occupations, knowledge about self, sources of knowledge used in making a choice, attitudinal traits, pressure from parents or parent surrogates, and emotional maladjustment.

Knowledge about occupations .-- Darley and Hagenah (1955), Ausubel (1954), Nicholas (1963), and others claim that students must have adequate knowledge of existing vocations before they can make realistic vocational decisions. Although this claim could be tested by a carefully designed experiment, this does not appear to have been done. The generalization is supported by indirect evidence only. Sinnett (1956), for instance, found rank-order correlations (W) ranging from .50 to .69 between vocational preferenceinterests congruency and the temporal order of job understanding. High congruency is positively associated with early understanding of the occupation. Sinnett also found rank-order correlations ranging from .58 to .69 between vocational preference-interests congruency and the complexity of the occupations. In his study, Wallace (1949) discovered that college men who had had a greater opportunity to

learn about their chosen occupation showed less discrepancy between their inventoried interests and choice than the students with less opportunity to gain such knowledge. Ginzberg <u>et al</u>. (1951) concluded from their intensive interviewing of adolescent boys that the choice of an occupation requires an expanding knowledge of the world--presumably including the world of work.

Reisner (1956), Lockwood (1958), and Ryan (1953) concluded from their research that there is a positive relationship between scholastic ability and realism of vocational preference. Such a conclusion provides tenuous but additional support for the importance of occupational knowledge in the process of occupational choice, assuming that bright students possess more occupational information than students who are not bright. It should be realized, however, that all three of the investigations cited above suffer from the two weaknesses of design mentioned earlier. The use of a vocational interest inventory as a criterion for appropriateness of vocational choice would avoid these weaknesses and, thus, provide an improved test of the above generalization concerning knowledge of occupations.

Knowledge of self.--Darley and Hagenah (1955), Ausubel (1954), Nicholas (1963), and others also conclude that a lack of self-knowledge is a source of irrational vocational decisions. Ostermann (1962) and Ryan (1953) found that college students who are accurate in making estimates of their class standing and of their mental ability scores,

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respectively, are also realistic in their occupational choices. Ginzberg <u>et al</u>. (1951, p. 202) conclude that an adolescent must, "enlarge his knowledge and improve his evaluation of himself" to successfully resolve the problem of occupational choice. No study appears to have been made concerning the relationship between ability to estimate one's interests and appropriateness of vocational choice among high school boys. Furthermore, no one seems to have tested the generalizability of the above conclusions to high school boys.

Crosby and Winsor (1941), in their study of college students, found a rank correlation (Rho) of .42 between the students' scholastic aptitude and success in estimating their own inventoried interests. Although this correlation is not high, it does support the notion that bright students make appropriate choices because they know more about themselves than students who are not so bright. Wrenn (1935), in comparing two groups of junior college students which differed very markedly in scholastic ability, found that the higher achievers had the more congruent vocational preferences and interests.

All the above studies suggest that self-knowledge plays an important role in the making of an appropriate occupational choice but they leave certain questions unanswered. For instance, how important is one's ability to compare one's vocational interests to those of men in one's chosen line of work? Is it possible to obtain similar

results with adolescents in high school?

Personality traits.--According to the investigation by Ginzberg et al. (1951), adolescents must be able to compromise, to delay gratification and to appreciate endsmeans relationships, if adolescents are to arrive at an occupational choice other than by default. Apparently no one else has attempted to test this conclusion, however. The same authors have asserted that their work-oriented subjects were more successful in making occupational choices than were their pleasure-oriented subjects. McArthur (1954) hypothesized that the middle-class, public school graduate who attends Harvard as an undergraduate views his chosen occupation as a means to prove his own worth to himself and to others. Mahone (1960) was able to show that high n Achievement, coupled with low anxiety, is positively related to congruency of vocational preference and interests.

Ginzberg <u>et al</u>. also concluded that an active, as opposed to a passive, attitude is required to resolve the problem of selecting an occupation. Super and Overstreet (1960), in their longitudinal study of vocational maturity, discovered that acceptance of the necessity for making a choice is related to vocational maturity. McArthur (1954) hypothesized that students for whom the Strong Vocational Interest Blank shows the greatest predictive validity also make the greatest effort to obtain help from others qualified to assist them in making a successful choice.

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Wallace (1949) concluded that men whose occupational plans are consonant with their interests report more contacts with counselors than men with non-consonant plans and interests. His conclusion tends to bear out McArthur's hypothesis.

Ginzberg's outline of a theory of occupational decision making asserts that the following attitudinal traits are necessary for the crystallization of vocational choice: flexibility, willingness to delay gratification, appreciation of ends-means relationships, ambition and vocational involvement. The related research just reviewed suggests some means to indirectly test his generalization. If respondents high on vocational choice-interests congruency were found to be high on number of visits to their counselor, compared to respondents low on the same variable; this would support Ginzberg's notion about ambition and vocational involvement. The same thing could be said regarding the number of occupational information sources a respondent uses in making his choice.

Cohen (1955), Bernstein (1958), and Riessman (1962), in writing about the culture of social classes, describe how the lower-class sub-culture fails to transmit attitudes of flexibility and delayed gratification. Ginzberg's interviewers noted a marked passivity regarding occupational choice among the lower-class adolescents they interviewed. McArthur concluded from descriptions of social class sub-cultures that the middle-class exemplifies,

par excellence, the work orientation and active orientation which Ginzberg <u>et al</u>. have described. This suggests the use of social stratification as a crude index of the above attitudinal traits.

Apparent crystallization of vocational choice.--Wallace's (1949) study suggests that college men with a crystallized choice are more apt to select a vocation consonant with their interests than students with a less crystallized choice. It is not known whether this same relationship holds for the apparent crystallization of choice characteristic of some youth in the tentative vocational choice period.

Parental pressure to over-aspire.--This is frequently listed as one source of the lack of realism of occupational choice among youth (Korner, 1946; Darley and Hagenah, 1955; Ausubel, 1954). However, no research employing a suitable criterion of such realism appears to have been conducted regarding the effects of parental pressure upon children to over-aspire.

Emotional maladjustment.--Korner (1946), Ginzberg et al. (1951), and others assert that emotional maladjustment is another source of inadequate realism in occupational choice. There seems to be no published evidence using satisfactory criteria for the dependent variable to support this conclusion. There are dissertations by Ryan (1953); Reisner (1956); Aalto (1959); and Kinnane (1958) focusing on this subject but their findings, taken as a

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CHAPTER III

RESEARCH HYPOTHESES, QUESTIONS, AND GENERAL PROCEDURES

Hypotheses and a Question About Knowledge of Self and of Occupations

Ginzberg's (1951) tentative theory of occupational choice proposes that there is a positive correlation between knowledge of self and realism of occupational choice. The results of two investigations with college students support the proposition. Ostermann (1962) found that students with realistic vocational choices made more accurate estimates of their class standing with regard to grades than did students with unrealistic choices. Ryan's (1953) realistic group made more accurate estimates of their mental ability scores than his unrealistic group was able to do.

No studies of the relationship between estimates of one's interests and the appropriateness of one's occupational choice appear to have been made. However, it is reasonable to assume that the relationship would be parallel to the association between scholastic ability and realism of vocational choice reported in the above studies.

The following hypothesis will be tested to determine the applicability of Ginzberg's theory to the population

used in this study:

The congruent sub-sample will have higher ratings on estimating their scholastic ability and their vocational interests than will the incongruent sub-sample.

Ginzberg's theory also postulates that the successful resolution of the need to make a vocational decision requires an increasing knowledge of occupations themselves. The generalization gives considerable weight to the cognitive dimension of occupational choice and suggests that realism of choice is correlated with academic ability. In other words, young people who have the ability to learn what is necessary to do well on scholastic ability tests can be expected, other things being equal, also to do well in learning about various prospective vocations.

If cognitive ability plays a large role in the attainment of a realistic occupational choice, then one would expect bright boys to have a better record in this respect than boys who are not bright. This is precisely what Reisner (1956), Ryan (1953), and Wrenn (1935) concluded after studying college students' vocational preferences. It is quite likely, however, that the appropriateness-ofchoice ratings made by the judges in the first two studies were contaminated by the judges' knowledge of the subjects' academic ability. Furthermore, there is a ceiling effect operating in such studies which makes over-aspiration among boys who are average and below average in academic aptitude more probable than among boys who are above average.

Wrenn's earlier study does not exhibit these weaknesses because he used vocational choice-interests congruency as his sole criterion of appropriateness of occupational choice. However, Wrenn compared a group of junior college students whose scholastic ability scores were extremely high with another group whose scores were extremely low. It would not be safe to make inferences from his sub-samples to those used in this study.

All of the research discussed in this section -including the study by Ginzberg and his associates--was conducted either primarily or exclusively with college students. The students usually expect to enter vocations in the middle or upper socio-economic strata, and it is these occupations about which it is most difficult to learn. Learning about such vocations makes more demands upon one's mental ability than learning about occupations in the lower socio-economic strata. This means that the importance which Ginzberg's theory gives cognition may be overemphasized with regard to high school boys' tentative occupational choices because a relatively high proportion of the boys expect to enter lines of work in the lower strata. Lockwood (1958) found that his sub-sample of high school students considered to have made an appropriate choice was brighter than his sub-sample of students judged to have made an inappropriate choice. This study, however, has the same methodological weaknesses as Reisner's and Ryan's studies.

Although there is a considerable amount of research which appears to emphasize the importance of cognition in arriving at a realistic occupational choice, there are at least three reasons for questioning this notion as it applies to the tentative occupational choice of high school boys. First, many of the studies have serious methodological defects. Second, most of the studies involve students at the college level. Third, most of the investigations involve vocations requiring the most complex role behavior. In order to directly assess cognition's role in the making of tentative occupational choices, the following research question was posed:

Will the respondents in the congruent group have a higher mean scholastic ability score than the respondents comprising the incongruent group?

The authors of <u>Occupational Choice</u> (Ginzberg <u>et al.</u>, 1951) give little attention, in their theory, to the quality of boys' sources of knowledge about the world of work. From the theory, however, it is possible to deduce that the occupational knowledge which boys require is better obtained from certain sources than from others. The results of Wallace's (1949) study very tentatively imply that there is a positive association between occupational choiceinterests congruency and the degree to which college students rely upon the following sources of information about their chosen vocation: friends, school or teachers, books and literature, and work experience. The following hypothesis has been designed to test the above corollary to

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Ginzberg's theory:

The proportion of the congruent group reporting one of the following as its most important source of information will be larger than the proportion of the incongruent group mentioning the same source: friends, teachers, school, books and magazines, and work experience.

Apparently, no one has determined whether or not there are sources of information, other than the above, which are likely either to promote or to hinder the making of an appropriate vocational choice. Therefore, the following question was asked in order to shed some light upon the matter:

Does the congruent sub-sample differ from the incongruent sub-sample in terms of the proportion of respondents who report one of the following as their main source of information regarding their tentatively chosen occupation: family, relatives, counselors, movies and TV, observation, leisure-time activities, and examination of the products of an occupational group?

One would expect, as a corollary of Ginzberg's theory, that the following are positively associated with vocational choice-interests congruency: the number of visits one makes to one's counselor and the number of sources of information one uses to arrive at a tentative vocational choice. Wallace (1949) found such an association for number of counselor visits but he did not investigate the number of information sources his respondents had used. The hypothesis which follows is based upon the above deductions:

Members of the congruent group make more visits to their school counselor and use more sources of information when making a vocational choice than do the members of the incongruent group.

Hypotheses Concerning Attitudinal Traits

Eli Ginzberg and his associates maintain that compromise, delayed gratification, and a sense of temporal order are essential requisites for successfully arriving at a vocational choice. These attitudinal traits, taken together, appear to be synonymous with what Edwards and Wilson (1958) call "prudentness".*

According to Ginzberg's theory, boys who possess an inflexible adherence to extrinsic, immediate rewards and who are unable to formulate and consistently pursue remote, long-range goals will not make normal progress toward a real crystallization of their choice. Both of these traits together are very similar to Edwards' and Wilson's concept of "immediateness".**

The above two propositions from Ginzberg's theory may be tested using occupational choice-interests congruency as the criterion for realism of occupational choice. In order to conduct the test, the propositions have been rephrased using the terms "immediateness" and "prudentness" to denote the attitudinal-trait variables described by Ginzberg. The following hypothesis will be employed to test the propositions:

> *See pages 5 for a definition of this term. **See pages 5-6 for a definition of this term.

The congruent group will have higher scores for prudentness and lower scores for immediateness than will the incongruent group.

A number of studies suggest that a sizable proportion of youth make tentative vocational choices which are unrealistic. These studies have already been reviewed,^{*} and it is now time to look at two of them more carefully. Stephenson (1957a; 1957b) and Youmans (1954, 1956) both cross-tabulated their data according to the occupational level of each respondent's father and according to the occupational level of each respondent's expected vocation. "Expected vocation" was defined in terms of the occupation a boy expects or plans to enter rather than what he would like to enter upon finishing his education. As one would expect, the overwhelming majority of the respondents with fathers in the top occupational levels expected to follow in their father's footsteps.

The same trend toward the most prestigeful levels and away from the least prestigeful levels is observable in the answers of respondents whose fathers were classed as manual workers. About twenty per cent of the latter group of boys, for instance, reported they were planning to enter professional occupations.

While the surveys conducted by Stephenson and Youmans suggest that youth from middle-class families are more realistic about their vocational expectations than are

^{*}See pages 11-12.

lower-class youth, the surveys' findings are not definitive. This is because both studies lack a clear-cut criterion for assessing realism of occupational choice. Tentative occupational choice-vocational interests congruency is an objective measure of this variable, however, and it should be possible to use it to shed light upon the relative realism of choice exhibited by youth with different social-class backgrounds. "How should it be used?", is the next question which needs to be answered.

There is considerable agreement in the literature that overaspiration is one of the most important sources of the lack of realism in vocational choices among youth. Merton (1949, pp. 125-149) maintains that to aspire to upward mobility is a value which pervades all levels of our social structure, although not necessarily to the same degree. This notion is supported by Stephenson's and Youmans' data regarding vocational expectations as well as by Carp's (1949) earlier findings. While certain social classes are likely to value social mobility more than others, it also seems very likely that most youth have taken on this value to some extent. This is only part of the problem, however, and the other facet has to do with the way young people learn vocational interests.

According to Darley and Hagenah (1955, pp. 134-193), there is no general agreement concerning how vocational interests are learned. There is some evidence, nonetheless, which suggests that the learning of interests may be

explained in terms of socialization theory. The following quotation by Merton, Reader, and Kendall (1957, p. 289) indicates what is meant by socialization:

. . . the technical term socialization designates the processes by which people selectively acquire the values and attitudes, the interests, skills, and knowledge--in short, the culture--current in the groups of which they are, or seek to become, a member. It refers to the learning of social roles. . . . Socialization takes place primarily through social interaction with people who are significant for the individual . . .

Strong (1943, pp. 680-681) reported a study of one-hundred and ten pairs of fathers and sons whose scores on twentytwo scales of the Strong Vocational Interest Blank were compared by correlation analysis. If interests are learned through interaction with significant others -- in this case, fathers--one would expect to find a statistically significant correlation between father's and son's SVIB scores. The obtained correlation coefficients ranged between .11 and .48 with an average of .29. The latter coefficient is statistically significant. As a check, Strong correlated the score of father A with the score of the son of father B with the score of the son of father C, etc. The average of the resulting coefficients of correlation is -.03. While the father-son pairs which Strong studied were drawn from a population of middle-class respondents, one would predict from socialization theory that a similar relation exists between the interests of lower- and upper-class fathers and sons. Strong (1943, pp. 185-215) demonstrated that the members of occupational groups differ in their occupational

interests; although, he also reported quite a bit of overlapping between adjacent groups in the prestige hierarchy. This suggests that children who are socialized within the matrices of different social classes develop patterns of interests which are somewhat distinct from youngsters in classes other than their own--again with quite a bit of overlapping. It is time now to summarize what has been said.

There is evidence from questionnaire-type surveys which permits us to say that the great majority of youth demonstrate the mobility orientation which makes up part of the American ethos. There is also some evidence--admittedly slight--which indicates that members of social classes tend to socialize their young in such a way as they develop patterns of vocational interests which differ between classes. One would expect, therefore, when congruency of occupational choice and interests is used as a criterion of realism of vocational choice, middle-class youths' choices would appear to be more realistic than those of lower-class youth. This is because a sizable proportion of lower-class youth may be expected to plan to enter middle-class occupations whose members possess a pattern of vocational interests different from those which the lower-class youth have learned within their particular social class sub-culture. This may be succintly stated in the form of the following hypothesis:

Middle-class boys have tentative vocational choices

which are more consistent with their inventoried vocational interests than do lower-class boys.

Question About Apparent Crystallization of Occupational Choice

Crystallization of occupational choice is a synthesis of values, interests, aptitudes, and objective reality which leads to a commitment to a particular vocation.^{*} This synthesis, according to Ginzberg <u>et al</u>. (1951), usually occurs between the ages of nineteen and twenty-one, among the population they studied.

Ginzberg and his associates point out that crystallization occurs after a person has had a chance to explore and test the above elements of occupational choice. This appears to mean that a person's crystallized choice is congruent with his values, interests, aptitudes, as well as with the realities of the occupational structure. There is some evidence which supports this notion.

Wallace (1949) studied the relationship between occupational choice-interests congruency and what he termed as self-conflict regarding vocational choice. This study is relevant to Ginzberg's conclusions about crystallization of choice because Wallace's notion of self-conflict is similar to what Ginzberg refers to as the absence of a commitment to a particular occupation.

Wallace found male college students whose vocational choice was consonant with their measured vocational

*See page 8 for a more detailed definition.

interests showed less self-conflict regarding their decision than the students whose choice was not consonant with their interests. He fashioned an index of self-conflict using eight questionnaire items similar to Items g, h, 6, 7 and 8 in the questionnaire used in this study.^{*} Wallace used scores from the Strong Vocational Interest Blank as a basis for dividing his sample into two sub-samples analogous to the congruent and incongruent groups in this study. When he compared the two sub-samples' mean self-conflict scores, Wallace found the incongruent group had the higher mean score. This supports Ginzberg's theory, as it applies to the Columbia University students he studied.

Most of the boys studied in this investigation, unlike upper-classmen in college, have not had the experience necessary to test the components of vocational choice which have been discussed (Ginzberg <u>et al</u>., 1951, p. 108). Therefore, one would not expect boys with high vocational choiceinterest congruency to differ from boys with low congruency in terms of crystallization. This is because high school students have not had the experiences which are necessary for them to integrate their values, interests, and aptitudes so they are consonant with each student's vocational expectation. All of this may be briefly stated in the form of a question as follows:

Do boys who have made a tentative vocational choice which is congruent with their inventoried vocational

*See Appendix A, pages 117-18.

interests differ in terms of crystallization of occupational choice from boys who have made a choice which is not congruent with their interests?

General Procedures

Sample.--The sample consists of 224 boys who were eleventh graders in Berkeley, California, during the spring of 1964. During the spring of 1959, Edwards and Wilson (1961) collected certain data from 405 sixth-grade boys in the Berkeley schools. The latter group constituted almost all the male sixth graders in the school district. The sample of 224 eleventh-grade boys consisted of all the 405 boys in the original sample still attending school in Berkeley in the spring of 1964.

The sample of 224 boys used in this study and the group of 181 boys who had been among the group of 405 sixth graders but who were no longer part of the same graduating class were compared in terms of their socio-economic status and race. This was done in order to determine what effect attrition may have had upon the representativeness of the smaller sample. Before describing how the two comparisons were made, something should be said concerning the various statistical tests which were used in making these and other comparisons throughout the rest of the study.

The following four types of statistical tests were employed, at one time or another, in the analysis of the data collected in the investigation: (1) Kolmogorov-Smirnov, (2) chi square, (3) difference between proportions, and (4) Student's \underline{t} . Because most of the data were at the ordinal level of measurement, it was necessary to rely a great deal upon such non-parametric tests as the first two listed. Every effort was made to utilize the most powerful tests available yet, at the same time, to avoid violating the assumptions involved in their mathematical models. Except for the \underline{t} tests, the .05 level of confidence was used throughout the analysis of the data. One-tailed tests were employed when the direction of the results had been pre-dicted.

In contrasting the group of 224 respondents with the group of 181 lost to attrition, a comparison of each group's distribution of respondents among ten categories of father's occupation[#] was made. The system of occupational categories was developed by Edwards and Wilson (1961), and the categories appear to be ranked according to the prestige and the level of skill and training associated with the occupations in each category. By taking advantage of the ordinal nature of these occupational data, the non-parametric--but nonetheless powerful--Kolmogorov-Smirnov test (Blalock, 1960, pp. 203-206) was used to test the hypothesis that the two samples were drawn from the same population. Henceforth, the Kolmogorov-Smirnov test will be referred to as the Smirnov test. When the differences between the cumulative proportions for the above two distributions were computed, the

^{*}See Appendix D for a list of the occupational categories.

largest difference (i.e., D) was found to equal .090. This value was less than the .144 necessary to reject the null hypothesis at the .05 level of confidence.

The group of 224 boys and the group of 181 boys were also compared in terms of the number of Negroes, Orientals, and Caucasians in each group. This was done by classifying the respondents in each of the first two groups according to race--see Table 1. Chi square (Walker and

TABLE 1.--Percentage of the respondents who were sixth graders in 1959 classified according to their enrollment status in 1964 and race

	Race	Enrolled (N = 224)	Not Enrolled (N = 181)
Negro	(N = 107) • • • •	29.0	23.2
Oriental	(N= 30) • • • •	11.2	2.8
Caucasian	(N = 264)	59.8	71.8
No answer	$(N = 4) \dots$	0.0	2.2
Total	(N=405) • • • •	100.0	100.0

 χ^2 = 18.063, df = 3, p < .05 (two-tailed test)

Lev, 1953, pp. 99-100) was employed to estimate the likelihood that the departure of the observed frequencies from the expected frequencies was a chance occurrence. This test is frequently used in analyzing data such as these which are at the nominal level of measurement. The obtained χ^2 of 18.063 (df = 3) was greater than the 7.815 associated with the .05 level of confidence. Therefore, the null hypothesis was rejected.

The group of 224 eleventh-grade students. from which the congruent and incongruent sub-samples were drawn. does not appear to be entirely representative of the larger group of 405 sixth-grade students. Although the 181 youths who were lost to attrition did not differ from the 224 still enrolled in the Berkeley schools in 1964 in terms of father's occupation, the two groups did differ with regard to race. Negroes and Orientals, particularly the latter. were under-represented among the attrition group; whereas, Caucasians were over-represented among the same group. This finding is consistent with the general trend throughout the country for whites to move from urban centers to the suburbs. The research sample's lack of complete representativeness suggests that any generalizations which are made from the study of the congruent and incongruent sub-samples should probably be limited to those high school boys whose families do not comprise the geographically mobile segment of urban residents.

Berkeley is a community of over 111,000 people within the metropolitan San Francisco-Oakland Bay Area. It is the site of the University of California's main campus which has an impact upon the community and the high school which is impossible to measure but easy to observe. A high

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proportion of the city's inhabitants are either retired or active professional people, and there are sizable proportions of various ethnic, racial, middle and lower socioeconomic groups residing there.

The Berkeley High School has over 3,000 students, and because it is the city's only senior high school, it draws from the entire community. The ratio of students to each full-time counselor is about 250-300.

It is difficult to estimate the degree to which the findings based upon this sample may be safely generalized to other high school boys. For instance, it is not known to what extent the following characteristics of the Berkeley High School have affected the findings: (1) relatively low ratio of full-time counselors to students; (2) no vocational orientation courses <u>per se</u>; and (3) a very wide variety of course offerings. One should be very cautious, therefore, about making inferences from this sample to other high school students until more is known about how such factors effect the congruency between students' vocational interests and their occupational choice.

<u>Pre-testing the questionnaire, the direction sheets,</u> and the distribution and collection procedures.--A representative group of thirty eleventh-grade boys in another large but suburban high school was used to pre-test the questionnaire. The school is located in the San Francisco-Oakland Bay Area.

Collection of the data. -- The following materials

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were distributed by the investigator during a series of small group meetings with the respondents: the questionnaire,^{*} the interest inventory materials, and the spirit duplicated directions for taking the inventory.^{**} The meetings were held during school hours. Both in these meetings and in the written directions issued with the above materials, the respondents were strongly directed to work independently in responding to the items and to make their answers as sincere as possible. All the students in the sample were contacted at least once, and an attempt was made to contact a second time each member of the sample who did not return the materials as directed. During this follow-up period, the investigator gained the impression that almost all of the respondents filled out the material during their study hall period.

The scholastic ability scores used in the study were obtained from the school records. Almost all the other data were obtained from the files of Dr. Edwards' and Dr. Wilson's Academic Success Project (Edwards and Wilson, 1961).

One hundred and eighty-one students, or 80.8 per cent of the sample, returned both the questionnaire and the answer sheet for the interest inventory. These students will be referred to as the "participant group" or simply "participants".

^{*}See Appendix A.

^{**}See Appendix B.

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CHAPTER IV

CONGRUENCY OF TENTATIVE OCCUPATIONAL CHOICE AND INVENTORIED VOCATIONAL INTERESTS

Tentative Occupational Choice

The one hundred and eighty-one participants in the study were dichotomized into a congruent sub-sample and an incongruent sub-sample. This bifurcation of the participants was accomplished on the basis of the congruency between their tentative occupational choice and their inventoried vocational interests. In order to form the two sub-samples in this manner, it was necessary to ascertain each participant's tentative occupational choice at the outset. The respondents' occupational choice was determined from their response to the second of the following two items in the questionnaire:

- a. If you had the chance to go into any kind of work you wanted when you are all through with your education, what line of work would you choose? Think only of what you <u>would like</u> to do, what you would be <u>happy</u> at. Do not think about the abilities required or the training which is necessary to get into this kind of work. Just write down the name of the line of work you <u>would like</u> to be in. If you want more than one, write them down, but <u>put your favorite one first</u>.
- b. People sometimes think about what they would like to be, although they don't really believe it could come true. They also usually have a fair idea of what they <u>actually</u> will do. Now think

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about what you will really be when you are no longer a student. What line of work do you <u>actually think</u> you will be in at that time? Give a <u>specific</u> line of work. For example, write "plumbing contracting" not "plumbing business"; write "TV repairing", if that is what you mean, rather than just "electronics"; and use the words "mechanical engineering" instead of only "engineer". You may put down more than one kind of work, if you wish, but put the one which you think is most likely to come true first.

The purpose of Item a is to give the respondent a chance to express his fantasy vocational preference thereby maximizing the realism of his response to Item b. The second item was made to elicit a vocational expectation rather than a preference because an expectation appears to offer the better prediction of what vocation the student will actually enter. Dresden (1948) and Holloway and Berreman (1959) have advocated the use of an expectation to indicate vocational choice.

<u>Results</u>.--Out of the 182 students who returned a questionnaire, 181 made an interpretable response to the second item above. Of this group of 181 boys, 164 (90.6 per cent) reported a tentative occupational choice; 15 (8.3 per cent) did not report a choice; and 2 (1.1 per cent) indicated an expectation of entering the military service. The boys' choices were classifed into the fifty-eight types of occupations listed in Column 1 of Table 1. The types of occupations are ranked with the most popular one receiving the highest ranking. Column 2 shows the distribution of choices which the respondents wrote first.

Types of Occupation (1)	No. of Times Chosen (2)	Percentage of Scorable Choices (3)
High school teacher	16 14	18.7 100.0
Architect	10 9 7	60.0 100.0 100.0
Accountant	-6551	100.0 100.0 100.0
Salesman or broker (e.g., route, insurance, real estate)	5	20.0
Musician	4 4 3 3	0.0 0.0 100.0 0.0
Dentist	3 3 3 3	100.0 100.0 100.0 100.0
Cosmetologist	2 2 2 2	0.0 0.0 0.0 0.0
Mathematician	2 2 2 2	0.0 0.0 100.0 0.0
Veterinarian	2 2 1	100.0 50.0 0.0
Worker	1 1 1	0.0 0.0 100.0
	1	100.0

TABLE 2.--Types of occupations chosen, number of times each type was chosen, and percentage of choices which were scorable

Types of Occupation (1)	No. of Times Chosen (2)	Percentage of Scorable Choices (3)
Carpenter Clerk typist Economist Electrician Florist Government official Grounds keeper Heavy machinery operator Heavy machinery operator IBM worker Machinist Military officer Newspaper reporter Pharmacist Pharmacist's helper Postal worker Psychologist Rocket builder and flyer Roller-derby skater Secretary Sheet metal worker Truck driver U.S. Senator No tentative occupational choice Uninterpretable or military service	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	$\begin{array}{c} 0.0\\ 0.0\\ 0.0\\ 0.0\\ 0.0\\ 100.0\\ 100.0\\ 0.0\\ $
	182	• • •

TABLE 2.--Continued

Inventoried Vocational Interests

In order to measure a boy's occupational choiceinterests congruency, it is necessary not only to know his

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occupational choice but to measure his vocational interests as well. All of the one hundred and sixty boys who reported a tentative occupational choice completed the vocational interest inventory used to assess their interests.

<u>Measurement</u>.--The Kuder Preference Record-Occupational Form D (Kuder, 1961) was used to measure the respondents' vocational interests. This particular inventory was used rather than the Strong Vocational Interest Blank because the KPR-0, i.e., the Kuder Preference Record-Occupational, is easier to administer than the Strong. The simpler content of the KPR-0 was also an important consideration because the respondents were relatively young and represented a wide range of abilities. The shorter testing time of the Kuder was another advantage because the students took the inventory on their own time.

Kuder (1961) reports that the median coefficient of reliability for 48 KPR-0 keys is .78. It is based upon two administrations of the inventory, one month apart, to 96 high school students. The inventory's validity is indicated by its power to differentiate between a group of men-ingeneral and various occupational groups. The men-in-general norm group used to standardize the instrument consisted of 1,000 men selected to represent a cross-section of various regions and different-sized communities throughout the country. The occupational norm groups usually consisted of about 200 members of an occupational organization the members of which are distributed over the entire country.

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Kuder developed a Verification Key for the KPR-O. The key is designed to detect a pattern of responses due to any of the following: failure to understand the directions, difficulty in understanding the content, or carelessness or insincerity in answering the questions. Each respondent's answers were scored with the Verification Key, and if they scored 44 or less, they were not included in the analysis. This procedure resulted in the use of cases that fall within Kuder's (1961, p. 14) "doubtful" range. However, because his intervals were developed on the basis of adult groups whose patterns of interests are known to have more structure than that of adolescents, it was decided not to adhere rigidly to his suggested cutting points.

Of the 224 boys who were contacted, 177 completed the interest inventory as directed. There were 43 students who did not return their answer sheet, and 4 of the returned sheets were not scorable. Out of the group of 177 boys, 159 (89.8 per cent) obtained verification scores above 44. The next step was to score the answer sheets using the occupational keys.*

Two conventions were used in trying to match the respondents' tentative vocational choice response with one of the fifty keys available for the KPR-O. First, if no key were available for a respondent's first response and he reported other choices, one of the other choices was scored.

*See pages 8-9 for an explanation of this term.

However, this was done only if the alternate choice could be classed with the first choice using the system worked out by Roe (1954) and Mosier, Dublin, and Shelsky (1956). Second, if there were a question concerning matchability, e.g., a key for chemists with a choice for chemistry laboratoryassistant, it was referred to an authority for a decision.^{*} There were only eight such cases.

It was possible to score 99, or only 55.3 per cent, of the 164 tentative vocational choices, using the method just described. The percentage of the respondents' scorable occupational choices was computed for each of the fiftyeight types of occupations listed in Table 2. The percentages are shown in Column 3 of the table.

Non-scorability of Tentative Vocational Choices

The large proportion (44.7 per cent) of respondents for whom the Kuder-Occupational was found unusable raises some important questions. Is there anything about the boys whose choice was scorable which distinguish them from the boys whose choice was not scorable? Is there anything different about the kind of occupations these two groups of boys chose? Answers to these questions would indicate some of the consequences of using the KPR-O with high school juniors.

^{*}Prof. Henry B. McDaniels, Chairman of the Guidance Department, School of Education, Stanford University, was kind enough to do this.

In order to answer the questions, respondents with a scorable vocational choice were contrasted with the respondents with an unscorable choice. The comparison was made in terms of the following five variables of the respondents: scholastic ability, number of visits to their counselor, race, number of information sources used in arriving at a choice, and family's socio-economic status. A comparison was also made concerning the socio-economic status of the occupations chosen by the students.

Tentatively chosen occupation's socio-economic status.--The Strong Vocational Interest Blank is the most widely used inventory incorporating occupational norms. It was designed for use with university students, however, and its keys are mostly for the more prestigeful occupations requiring college training (Strong, 1943, p. 553). It would appear that any vocational interest inventory to be used in the generally mass testing and vocational guidance programs in public high schools should have keys representative of the entire occupational structure. In order to determine how well the KPR-O fulfills this criterion, the boys who had a "keyed" choice were compared with the boys who did not have a "keyed" choice. The two groups of students were contrasted on the basis of their chosen occupation's socioeconomic status.

The occupations chosen by the boys were classified according to Edwards' and Wilson's (1961) system of occupational categories. They used ten categories ranging from

"executives" to "manual workers".^{*} The ranking was based upon the prestige which society attributes to occupations and upon the ability and training which members of the occupations are expected to have.

The following two conventions were used in classifying the students' occupational choice (i.e., their response to Item b in the questionnaire) according to the prestige level of their expected vocation: (1) Unless a boy's response indicated a specific occupation (e.g., C.P.A.), his answer was classified according to the level at which one usually enters the occupational field chosen (e.g., accountant). (2) The second, third, etc. responses were used to help classify some of the students' first response. It was possible to categorize 98.2 per cent of the 164 occupational choices made by the students.

The responses of one hundred and thirty-four boys were cross-tabulated according to whether or not each boy's tentative occupational choice was scorable using the KPR-O and according to their choices' level of prestige. The results are shown in Table 3. Of the total group of 134 boys included in this analysis, 54 chose professional and executive vocations, and a key was available for 92.6 per cent of the 54 boys' chosen vocation. On the other hand, 60 boys chose lower and upper white-collar vocations, ** and a key

*See Appendix D.

**See occupational categories 3 and 4, Appendix D, for examples of such white collar jobs.

existed for only 43.3 per cent of the 60 students' expected line of work.

Father's Occupation	Unscorable (N=47)	Scorable (N = 87)
Unskilled and semi-skilled Skilled	4.3 10.6 21.3 51.0 4.3 0.0 0.0 6.4 2.1 0.0	1.1 10.4 12.6 17.3 1.1 0.0 0.0 26.5 28.7 2.3
Total	100.0	100.0

TABLE 3.--Percentage of chosen occupations classified by scorability and socio-economic status

D = .490, p < .05 (two-tailed test)

The null hypothesis that the "keyed" group and the "non-keyed" group were drawn from the same population was tested using the Smirnov two-sample test for large samples (Blalock, 1960, pp. 203-206). As pointed out earlier,^{*} these occupational data are ordinal; therefore, the use of the non-parametric Smirnov test is not only appropriate but desired for its robustness. A two-tailed test was used. When the two distributions of percentages which form the columns in Table 3 were converted to cumulative distributions of proportions, the maximum difference between them (i.e., D) equaled .490. This is greater than the .246 associated with the .05 level of confidence, and the null hypothesis was rejected.

The findings just reported indicate that anyone who expects to enter certain white collar occupations is much less likely to find that his tentative choice can be evaluated in terms of the KPR-O norms than is the person who plans to embark upon a professional or executive career.

The new form of the Kuder appears to suffer from the same kind of limitation which has, in part, restricted the Strong Vocational Interest Blank from general use in high schools, namely, the Kuder's limited number of keys for all but the traditional professional occupations. This is a serious limitation in view of the burgeoning of certain white collar occupational groups which has occurred during the last generation (Kahl, 1957). In a word, the KPR-O cannot be used with a high proportion of boys who intend to enter particular lower or upper white-collar positions to evaluate their choice even though the number of such positions has been rapidly expanding.

<u>Family's socio-economic status</u>.--It is possible that Kuder's selection of occupations to key not only works to the disadvantage of students selecting certain vocations but also operates against students from the low and middle socio-economic strate. This proposition was tested by

comparing the keyed group with the non-keyed group in terms of the vocation of each respondent's father. The information about the fathers' occupation was obtained primarily from a questionnaire which Edwards and Wilson (1961, Appendix B, p. 44) sent to the boys' parents in 1959. The questionnaire data were supplemented by other information collected directly from the students themselves and from their school records. On the basis of all these facts, Edwards and Wilson classified the students according to the system of occupational categories described earlier.

The responses from the keyed and non-keyed groups were distributed over the ten occupational categories, and the data were treated in much the same way as in the previous analysis. When the null hypothesis that the two subsamples were drawn from the same population was tested using the Smirnov test, D was found to equal .092. This was less than the .248 needed to reject the hypothesis at the .05 level. Therefore, there appears to be no bias, in terms of the boys' socio-economic status, resulting from the sampling of occupations keyed for use with the KPR-O.

<u>Visits to counselor and sources of vocational infor-</u> <u>mation</u>.--Do the boys in the non-keyed group need to have their occupational choice evaluated with the help of an interest inventory more than do boys in the keyed sample? This is a difficult question to answer because it is not easy to measure what is referred to above as "need". However, it is reasonable to assume that students who make the

fewest visits to their counselor and who report using the fewest number of sources of information regarding their chosen occupation would have the greatest need for help in making a realistic vocational choice.

Item c on the questionnaire^{*} is a forced-choice item designed to elicit both the nature of the sources and the number of sources from which the respondent got information about his expected line of work. Item f reads as follows: "Since the beginning of school this year, how many times have you talked with your counselor either about a future line of work or about school matters related to a future vocation for yourself?" The boys' responses to Items c and f were analyzed in the same manner as the data related to occupational prestige. The sample with scorable occupational choices did not differ from the sample with unscorable choices in terms of either sources of information or counselor visits.

Scholastic ability.--Carter (1944) and Nicholas (1963) asserted that bright students make more appropriate occupational choices than do average students. If this were true, it appears that boys who are average and below average in terms of academic ability would need more vocational guidance than boys whose academic aptitude is above average. Because vocational interest inventories are an important tool of the vocational counselor, it would be worthwhile to

*See Appendix A, pages 116-17.

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know if the unscorable group differed from the scorable in terms of scholastic aptitude.

The School and College Ability Test, Level 2, was used, here and elsewhere in the study, as a measure of scholastic ability. The SCAT's composite, converted score was employed as a measure of both verbal and quantitative aptitudes. The mean SCAT scores for the non-keyed group and the keyed group were 293.780 and 299.476, respectively.

Student's <u>t</u> was used to test the reliability of the difference between the two means. This particular test was used because of its great power or robustness. Its use was based upon the assumption that the scores were drawn from populations in which the measures are normally distributed and that the SCAT constitutes an interval scale. Because of the difficulty of demonstrating the validity of the first assumption, the .01 level of confidence, rather than the .05 level, was adopted.

Under the null hypothesis and when direction is not predicted, the <u>t</u> value corresponding to a probability of .01 is greater than 2.576. The observed <u>t</u> equals .235, and the null hypothesis was accepted. It appears that the two samples come from populations which do not differ in terms of scholastic ability.

Race.--The data were also analyzed in order to determine whether Kuder's sampling of occupations to be keyed for the KPR-O works to the disadvantage of any racial group. The respondents' race was determined by asking each boy's

counselor whether the boy were either a Caucasian, Negro, or Oriental. The counselors' one hundred and forty-three responses were cross-tabulated according to the scorability of each boy's occupational choice and according to his race. The following null hypothesis was tested using chi square: there is no difference between the keyed group and the nonkeyed group in the number of their members who are Negroes, Orientals, or Caucasians. The appropriate value of chi square associated with a probability of .05 is 5.991; whereas, the observed chi-square value is only 3.860. The null hypothesis was accepted, and it was concluded that the limited applicability of the KPR-O keys does not necessarily work to the disadvantage of any of the racial groups stud-This concludes the description of how the keyed and ied. non-keyed samples were compared and what was found as a result.

<u>Summary</u>.--In order to determine some of the consequences of Kuder's selection of occupations to be keyed, a group of boys whose vocational choices are unscorable using the KPR-O was compared to another group whose choice was scorable. The respondents in the two groups were contrasted in terms of the socio-economic status of their chosen occupation, their socio-economic status, their scholastic ability, their need for vocational counseling, and race. These two groups were found to differ only with regard to the socio-economic status of their chosen occupation. It is primerily those youth who expect to enter white collar

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occupations^{*} who are most apt to find their choice cannot be evaluated using the KPR-O. It so happens that it is precisely this occupational stratum which has enjoyed the most expansion in recent decades. The findings with regard to the other four variables studied suggest, however, that the effects of Kuder's sampling of occupations are less than what one might expect. Having scored the students' responses to the KPR-O, the next step was to obtain a measure of how well each boy's occupational choice agreed with his vocational interests.

Tentative Occupational Choice-Vocational Choice Congruency

The methods used in this investigation to measure a person's tentative occupational choice-vocational interests congruency requires the following information: (1) the occupation which the person expects to enter, and (2) the extent to which his interests are like the interests of successful, satisfied members of the occupation he plans to enter. Once these data were collected for as many of the respondents as possible, the data were used to measure the dependent variable with which this investigation is concerned.

<u>Measurement</u>.--The respondents' raw score on the key corresponding to their chosen occupation was converted to a Differential Ratio, which was used to classify the students

^{*}See occupational categories 3 and 4, Appendix D, for examples of such white collar jobs.

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into either the congruent sub-sample or the incongruent subsample. Boys in the congruent group have a tentative occupational choice which is probably congruent with their inventoried vocational interests, and boys in the incongruent group have an occupational choice which is likely to be incongruent with their interests.

According to Kuder (1961), the Differential Ratio for a raw score on an occupational key^{*} indicates the relative proportion of two groups obtaining the same raw score on the inventory. The two groups are a sample of men-ingeneral and a sample of men in the occupation upon which the key was constructed.

If a respondent, for instance, were to obtain a raw score of 40 on the key for physicians, this would be converted to a Differential Ratio of +10. A +10 Differential Ratio means that the number of doctors in the occupational norm group who obtained a raw score of 40 was ten times greater than the number of individuals in the men-in-general group who received the same score. Both groups, however, must be the same size. A Differential Ratio of -10 means that ten times the number of persons in the men-in-general norm sample than doctors in the occupational norm group received a score of 40. An =DR (i.e., Differential Ratio) indicates equal proportions of the same number of members in both groups obtained the same raw score.

*See pages 8-9 for an explanation of this term.

Of the 159 respondents with verification scores above 44, 91 chose an occupation for which an appropriate key was available. The congruent and incongruent groups used throughout most of the subsequent analyses were formed from this sample of 91 boys.

Results.--All respondents in the group of 91 who obtained a + Differential Ratio (i.e., any DR from +2 to +10 and over) were classified as "congruent". Boys with a -DR (from -2 to -10 and under) were classified as "incongruent". There are a total of 87 cases in the congruent and incongruent samples. Of this total, 46 (52.9 per cent) are congruent cases, and 41 (47.1 per cent) are incongruent respondents. The two groups are hereafter referred to as the "research sub-samples".

There are four boys with = DRs, and the boys were not classified as having either a congruent or incongruent tentative occupational choice. They were included in the "combined sub-samples" (N = 91) used in the analysis which will be reported next.

Representativeness of the sub-samples.--It is possible that the combined congruent and incongruent subsamples (N = 91, including 4 cases with = DRs) is not representative of the group of participants from which the subsamples were drawn (N = 181). In order to see if the combined sub-samples and the group of participants were different, the combined sub-samples were compared to the group of ninety participants not included among the sub-samples. The

comparison was made in terms of the following variables: socio-economic status, scholastic ability, race, attitudinal traits, and socio-economic status of chosen occupation. The variables were selected on the basis of research and theory regarding occupational choice and vocational interests. Each variable is operationally defined in subsequent chapters dealing with tests of the research hypotheses.

The data indicating every respondent's socioeconomic status were arranged in two frequency distributions, one for the combined sub-samples and one for the group of ninety other participants. The data for the socioeconomic status of each respondent's chosen occupation were treated in the same fashion. The Smirnov test was employed to determine if the difference in the two sets of cumulative distributions were too large to assume that the groups came from the same population. This is one of the most powerful statistical tests appropriate for use with ordinal-type data such as the above.

For the data regarding socio-economic status, the value associated with the .05 level of confidence is .209. The obtained D, using the Smirnov test, is equal to .159, and the null hypothesis was accepted. The value associated with the same level of confidence for the data on the socioeconomic status of each chosen occupation--see Table 4-is .219. The obtained D of .382 exceeds this value, and the null hypothesis was rejected. It was concluded from these findings that the combined sub-samples and the group of

Socio-economic Status of Chosen Occupation	Combined Sub-samples (N = 91)	Other Par- ticipants (N = 67)
Unskilled and semi-skilled	1.1 12.1 13.2 16.5 1.1 0.0 0.0 25.3 28.6 2.2	6.0 7.5 23.9 40.3 4.5 0.0 10.4 7.5 0.0
Total	100.1	100.1

TABLE μ --Percentage of boys in the combined sub-samples and in the group of other participants classified by the socio-economic status of chosen occupation

D=.382, p < .05 (two-tailed test)

other participants differed with regard to every respondent's chosen occupation's socio-economic status but not with regard to each respondent's socio-economic status. Fortyseven of the sixty-seven boys classed as "Other Participants" in Table 4 had non-scorable occupational choices. The data in Table 4 for the socio-economic level of chosen occupations are quite similar to those for the scorable and non-scorable groups shown in Table 2. Because of the overlapping of the combined sub-samples and other participants with the scorable and unscorable groups, respectively, it was concluded that each pair of groups differs in terms of

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The 2 x 3 contingency table shown in Table 5 was

TABLE	5	Percer	ntage	e of	boys	in	the	combi	lned	sub-	samj	ples	and
in	the	group	of	other	• part	;ici	lpant	s cla	assii	fied	by 1	race	

Race	Combined Sub-samples (N = 91)	Other Par- ticipants (N = 90)
Negro (N = 41)	15.4	30.0
Oriental (N = 23)	18.7	6.7
Caucasian (N = 117)	65.9	63.3
Total	100.0	100.0

 $\chi^2 = 9.450$, df = 2, p < .05 (two-tailed test)

set up to determine if the boys in the combined sub-samples differed from the other participants with regard to the relative proportion of Negro, Oriental, and Caucasian students in the groups. With 2 degrees of freedom, the probability of obtaining a chi square of 5.991 is .05. The value of the chi-square statistic actually obtained was 9.450, and the null hypothesis was rejected. Inspection of Table 5 shows that the percentage of Negro boys in the group of other participants is almost double the percentage in the combined sub-samples. The percentage of Oriental boys in the combined sub-samples approaches three times the percentage for

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the group of other participants.

After an examination of the types of occupations boys in these two racial groups were selecting, it was apparent that the boys were not expecting to enter the same kinds of occupations. The great majority of the Negro boys had tentatively chosen the lowest status occupations, whereas, most of the Oriental boys had selected professional vocations. The respondents in the combined sub-samples were found to differ from the other participants in terms of the relative proportion of Negroes and Orientals comprising the two groups. This difference seems to be explicable in terms of the differential occupational expectations of the two racial groups of students.

The mean scholastic ability scores for each of the two groups were computed, and the reliability of their differences was determined using the <u>t</u> test. The mean SCAT score for the boys in the combined groups and the other participants are 298.243 and 293.012, respectively. The value which was derived from the application of the <u>t</u> test is 1.901. The <u>t</u> corresponding to the .01 level of confidence is 2.576, with a two-tailed test and more than 120 degrees of freedom. The null hypothesis that the two groups were drawn from populations with equal mean SCAT scores was accepted.

The reliability of the difference between the mean prudency score for the students in the combined sub-samples and the other participants was also determined by the use of

Student's <u>t</u>. The means were 43.471 and 45.028, respectively. The obtained <u>t</u> for their difference equals -1.267, and this is less than the 2.576 associated with a probability of .01 when the test is two-tailed and degrees of freedom are more than 120. This finding led to the acceptance of the null hypothesis that the two samples of P-I scale scores were both drawn from the same population of such scores. The findings for scholastic aptitude and for attitudinal traits (i.e., prudency-immediateness) show that the combined sub-samples and the group of other participants probably do not differ with regard to these two variables.

Because the group of ninety-one boys from which the congruent and incongruent sub-samples were drawn comprised less than one half of the youth who participated in this study, it was decided to compare this group of ninety-one boys with the collection of ninety boys who completed the interests inventory and questionnaire but were not included in the research semple. The two groups of participants were contrasted in terms of their members' socio-economic status, scholastic ability, race, attitudinal traits, and socioeconomic status of chosen occupation. It was concluded that the two groups probably differed only with regard to race and status of tentatively chosen occupation. This means that any generalizations which may be made from the research sample to the population from which it has presumably been drawn should be qualified in terms of the following facts: (1) Oriental participants were over-represented in the

sample. (2) Negro boys and others who tentatively chose the lowest-status jobs were under-represented in the sample.

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CHAPTER V

KNOWLEDGE OF SELF AND OF OCCUPATIONS

Self-estimations of Scholastic Ability and of Vocational Interests

Both theory and research concerning occupational choice and vocational interests indicate that there is a positive relationship between knowledge of self and realism of vocational choice, as the latter is measured in this study. The following analysis focuses upon only two facets of self-knowledge, namely, self-estimations of vocational interests and of scholastic ability. It is designed to test the hypothesis that the respondents who are high on occupational choice-interests congruency (i.e., realism of vocational choice) are also high on both of the above selfknowledge dimensions. Conversely, boys whose occupational choice-interests congruency is low will also be low on self-knowledge.

<u>Measurement</u>.--Item 9 in the questionnaire asked the respondents to rate, on a four-point scale, how their interests compare with the interests of men in their chosen occupation. The students were classified according to their Differential Ratio on the KPR-0, using the following four intervals: -- to - 7, - 6 to - 2, + 2 to + 6, and + 7 to ++.

If a boy whose DR put him in the highest interval (i.e., +7 to ++) also rated himself as having interests "very much the same" as men in his chosen occupation; his estimate would be rated "accurate". Had he estimated his interests as being "somewhat the same," the boy's estimate would be rated "rather accurate". The estimates which diverged most from inventoried interests were rated "inaccurate".

The last item on the questionnaire was designed to elicit the boys' estimation of their scholastic ability in relation to their peers, again on a four-point scale. The respondents' SCAT scores were used as a measure of scholastic ability. The 86 students in the congruent and incongruent groups who took the SCAT were grouped according to the combined groups' quartile scores. The respondents' estimates of their abilities were rated in the same way as their interests (e.g., if a boy in the top quartile of SCAT scores were to place himself at the lowest level of ability, his estimate would be rated "inaccurate").

Realism of vocational choice was measured in terms of the congruency between occupational choice and inventoried interests. The congruent sub-sample is high on realism and the incongruent sub-sample is low on realism. The manner in which these two groups were formed was explained on pages 60-62.

<u>Analysis of the data</u>.--The analysis used to test most of the research hypotheses is basically the same. The congruent group and the incongruent group were compared in

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terms of a variable specified in each hypothesis. This was done by setting up several $2 \times r$ tables, and "r" was determined by the number of levels or categories characterizing the variable. The "2," of course, refers to the congruent and the incongruent groups. In effect, these research subsamples represent two levels of congruency between occupational choice and interests. In testing the hypothesis mentioned above, the two sub-samples were contrasted with respect to both self-estimations of scholastic ability and of vocational interests.

The Smirnov test was used in testing the hypothesis stated at the beginning of this chapter. The ordinal character of the data was utilized to employ this powerful nonparametric test. The null hypothesis involved is as follows: the congruent sub-sample and the incongruent subsample were drawn from populations having estimations of academic ability and vocational interest ratings which are stochastically equal.

Findings and their interpretation.--Table 6 indicates that almost all the ratings of the respondents' estimates of their vocational interests ranged between "accurate" and "rather inaccurate". A higher proportion (39.1 per cent) of the congruent group than of the incongruent group (22.0 per cent) received ratings of "accurate". Conversely, the proportion (8.7 per cent) of the congruent group with the "rather inaccurate" rating was considerably lower than the proportion (43.9 per cent) of the incongruent

group with the same rating. The chi-square statistic with two degrees of freedom may be used with the Smirnov test to determine the statistical significance of an observed value of D, provided samples are large and the test is one-tailed (Blalock, 1960, p. 204). In this case chi square was found to equal 14.047, which is considerably more than the 5.991 associated with the .05 level of confidence. Therefore, the null hypothesis, as it pertains to vocational interests, was rejected.

TABLE 6.--Percentage of respondents classified by occupational choice-interests congruency and knowledge of their vocational interests

Estimates	Incongruent (N=41)	Congruent (N= 46)
Accurate	22.0	39.1
Rather accurate	26.8	50.0
Rather inaccurate	43.9	8.7
Inaccurate	7.3	2.2
- Total	100.0	100.0

 $\chi^2 = 14.047$, df = 2, p < .05 (one-tailed test)

Table 7 indicates that there is little difference between the research sub-samples in terms of self-estimations of scholastic aptitude. There were 29.3 per cent of the incongruent group who obtained the "accurate" rating compared to 37.8 per cent of the congruent group who received the same rating. The figures for the "rather inaccurate" rating are 12.2 per cent and 11.1 per cent, respectively. The Smirnov test was applied to the data in Table 7 in the same manner as it was used with the data in Table 6. In the case of the former the null hypothesis is as follows: The congruent group and the incongruent group arose from populations with the same ratings for estimating scholastic ability. The value for the chi-square statistic obtained is only .601, which is a good deal short of the 5.991 associated with a probability of .05. In this instance, the null hypothesis was accepted.

TABLE 7.--Percentage of respondents classified by occupational choice-interests congruency and knowledge of their scholastic ability

Estimates	Incongruent (N=41)	Congruent (N=45)
Accurate	29.3	37.8
Rather accurate	58.5	51.1
Rather inaccurate	12.2	11.1
Inaccurate	0.0	0.0
Total	100.0	100.0

 χ^2 = .601, df = 2, p > .05 (one-tailed test)

Conclusions and discussion .-- It is possible to make two conclusions on the basis of the foregoing analysis, one conclusion pertaining to interests and the other conclusion concerning scholastic ability. First, boys who make a vocational choice which is consistent with their interests know more about their interests in relation to their expected vocation than do boys who make an inconsistent choice. This generalization gives substantial support to Ginzberg's notion that realism of occupational choice is the result of a youth's bringing what he knows about his interests, values. and capabilities into line with what he knows about the occupational world. Second, boys who are high on vocational choice-interests congruency do not differ from boys low on vocational choice-interests congruency, in terms of knowledge of scholastic ability with regard to their peers. This conclusion does little more than point up the need for an instrument which will assess the congruency between a boy's scholastic ability and the scholastic ability of successful members of the occupation which the boy has tentatively selected. With such an instrument, it would be possible to study the relationship between occupational choice-interests congruency and occupational choice-scholastic aptitude congruency. Ginzberg's theory predicts a high correlation between the two variables but the second conclusion stated above implies that the two variables are more independent than theory would have us believe.

Scholastic Ability

Studies by Ginzberg <u>et al</u>. (1951), Reisner (1956), Ryan (1953), Wrenn (1935), and Lockwood (1958) appear to indicate that cognition plays a very important part in occupational choice. However, the investigations have serious methodological flaws, employed college students for the most part, and usually dealt with only the more complex occupations which such students typically expect to enter. Therefore it is not clear how important cognition is in the making of a tentative occupational choice among high school boys. It is reasonable to assume that if cognition is very important, the congruent group in this study would be brighter than the incongruent group. The following analysis was made in order to determine if the two groups did differ in scholastic ability.

<u>Analysis</u>.--The mean SCAT score was computed for the congruent and the incongruent groups, and the reliability of their difference was estimated using the <u>t</u> test. The distribution of scores in each of the sub-samples did not appear to depart from normality to any marked degree. However in the light of the difficulty of actually demonstrating that certain assumptions associated with the <u>t</u> test were fulfilled, the level of confidence was set at .01 rather than .05.

<u>Results and their interpretation</u>.--The mean SCAT scores for the congruent and the incongruent group are 300.456 and 298.500, respectively. The obtained <u>t</u> for this

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difference has the value .085, and this falls short of the <2.660 > 2.617 associated with a probability of .01 (df = 84). The null hypothesis that the two samples were drawn from populations having the same mean SCAT scores was accepted.

<u>Conclusion and discussion</u>.--The amount of occupational knowledge, as indicated by a scholastic aptitude test, does not seem to play as significant a part in high school boys' selection of an appropriate vocation as theory would lead one to believe.

One expects, however, that scholastic ability would have been found more important in the making of tentative occupational choices if the following had been true: (1) All the boys selected vocations requiring complex role behavior. (2) The boys had relied exclusively upon sources of information requiring the ability to manipulate symbols. The findings reported in other sections of this report show that this was not true of the students studied. This points up the difficulty of making generalizations from research concerning high school students' occupational choice because of the great variance in the types of occupations which these students choose.

Importance of Various Sources of Information

Ginzberg and his associates, as well as others who have studied the phenomenon, agree that knowledge of occupations plays a part in occupational choice. This position

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implies that such information must be accurate, objective, and up-to-date if it is to promote realism of choice. Knowledge which is inaccurate, biased, and out-of-date can be expected to have the opposite effect.

Wallace's (1949) data suggest that college students who report school or teachers, friends, books and literature, and work experience as being of much importance as a source of information make more appropriate choices than students who rate the same sources less highly. The following analysis was made to determine if these relationships hold with regard to high school boys.

<u>Measurement</u>.--On questionnaire Item d, the respondents were asked to check the one forced-choice alternative which they felt was their main source of knowledge concerning their chosen vocation. These ten forced-choice responses, as well as one open-ended alternative, are included in Item c of the questionnaire.^{*} The results are shown in Table 8.

The last two types of information sources listed in the table came from the respondents' answers to the openended alternative. "Leisure" refers to the hobbies and other leisure-time activities through which the boys said they had learned about certain vocation-related activities. "Products" denotes observing, using, and/or examining the products of a particular occupational group.

^{*}See Appendix A, page 117.

Source	Incon- gruent (N=41)	Con- gruent (N=46)	Difference Be- tween Propor- tions Express- ed as Percent- ages	Total (N = 87)
Family Books, magazines School	34.2 21.9 4.9 7.3 4.9 7.3 4.9 7.4 9.4 9.4 0.4 2.4	17.4 23.9 19.6 8.7 4.4 6.5 0.0 4.3 4.3 2.2 0.0	$ \begin{array}{r} 16.8 \\ -2.0 \\ -14.7 \\ -1.4 \\ -3.8 \\ 2.9 \\ -4.1 \\ 9.8 \\ -1.9 \\ -4.3 \\ 0.2 \\ 2.4 \\ \end{array} $	25.3 23.0 12.6 8.0 6.9 5.7 4.6 3.5 2.3 2.3 1.1
Total	99 •9	100.0		99•9

TABLE 8.--Percentage of respondents classified by occupational choice-interests congruency and most important source of information

*Significant below the .05 level when corrected, (one-tailed test)

<u>Analysis</u>.--The proportion of boys who checked one of the information sources listed in Item d was computed for the congruent sub-sample and the incongruent sub-sample. Only three differences between proportions were tested to determine the likelihood that the differences were due to chance. The difference between proportions test for two independent samples was used for this purpose, and it was applied to the proportion of respondents in each research sub-sample who reported either "family" (two-tailed test), "school", or "books and magazines" (one-tailed test) as their most important information source. It would not have been wise to apply the test to any of the other nine differences between proportions because the frequencies involved are too small.

Results and their interpretation.--It may be seen from Table 8 that the differences between proportions for the incongruent and congruent groups are in the predicted direction for the following sources: "friends," "books and magazines," "school," and "experience". This was not true with regard to "teachers," however. The difference between proportions for "school" was the only one which proved to be statistically significant. The obtained \underline{z} for this difference equals 1.735, when corrected for continuity. This is slightly more than the value of 1.645 corresponding to the .05 level of confidence (one-tailed test).

The proportion of respondents checking "family" and "movies, TV" was higher among the incongruent group than among the congruent group. The difference between proportions for "family" is not statistically significant (twotailed test), and the difference for "movies, TV" was not tested because of the extremely small number of cases involved. Almost all the differences in proportions shown in Table 8 are based upon very small frequencies, and the reader is cautioned against placing too much weight upon the reliability of the differences shown in Table 8.

The twelve information sources have been ranked according to the number of respondents in the combined subsamples who checked each source. "Family" and "books, magazines" were, by far, the sources most often checked. It is rather surprising that only 1.1 per cent of the boys indicated that counselors were their main source of information.

<u>Conclusions and discussion</u>.--It is possible to conclude that more male high school students who have made a realistic tentative occupational choice feel that the school was their most important source of vocational information than do students who have not made a realistic choice.

It is quite possible that boys' use of family, movies, and TV as their main source of information is negatively associated with realism of choice. This is significant because the family is the most popular means of obtaining facts concerning possible lines of work; therefore, the finding deserves more study.

Number of Information Sources and of Counselor Visits

According to Ginzberg's theory, adolescents become more realistic in their occupational choices as they come to know more about the world of work. High school counselors are supposed to provide their counselees with information about various occupations when they ask for it. Among the typical socialization agents for the young in our society, the school counselor is the only person specially trained to perform this function. One would suspect, therefore, that

boys who make more than the average number of visits to their counselor for vocational guidance would make a more realistic tentative occupational choice than would boys who make less than the usual number of visits. There is some evidence which indicates that this is the case among college students at least.

Wallace (1949) compared his two sub-samples of college students in terms of the number of times they reported visiting a counselor at the university. One group was high on vocational choice-interests congruency, and the other group was low on congruency. Wallace found that the high congruency group made more counselor visits than the other group. This supports the above theory but it is not known whether the same results would be obtained with students of high school age.

The findings reported in the preceding section suggest that certain sources of information about vocations aid the making of a realistic vocational choice more than do others. These findings were suggested by previous research, but there does not appear to be any evidence regarding the effect of the number of sources of occupational knowledge employed during the process of arriving at a tentative occupational choice. It may be inferred from Ginzberg's theory that the number of information sources employed in this manner is positively associated with realism of occupational choice, as it is measured in this study.

The following hypothesis was formulated in order to

test the above proposition:

Members of the congruent group make more visits to their school counselor and use more sources of information when making a decision about a vocation than do the members of the incongruent group.

<u>Measurement</u>.--Item f of the questionnaire was used to assess the number of counselor visits the respondents had made. The item is reproduced as follows:

Since the beginning of school this year, how many times have you talked with your counselor either about a future line of work or about school matters related to a future vocation for yourself?

Item c* asked the respondents to select from a list of ten possible information sources the ones they had used in making their tentative occupational choice. Only four respondents took advantage of the open-ended part of this item to report their use of a source not included in the list. The item itself was adapted from a question in Wallace's (1949) questionnaire. The number of sources attributed to each respondent was the sum of the sources he either checked or wrote in himself.

<u>Analysis</u>.--The data for sources of information and for counselor visits were both analyzed in the same manner. The number of sources reported by the boys ranged from one to nine. These data were cross-tabulated with occupational choice-interests congruency. The number of visits which the respondents made to see their counselor ranged from none to eight, and the responses were also cross-tabulated with

^{*}See Appendix A, pages 116-17.

occupational choice-interests congruency.

The null hypothesis that there is no difference between the congruent and the incongruent groups in terms of the number of visits their members make to see their counselor and in the number of sources of information they use was tested using the Smirnov test. This powerful statistical tool may be used with the ordinal-type data which were analyzed. In both instances one-tailed tests were utilized, and the .05 level of confidence was adhered to.

Findings and their interpretation.--The number of information sources reported by the respondents clustered between two and five with a sharp dropping off after five. This is shown in Table 9. The observed value for χ^2 equals 7.856, which is greater than the 5.991 corresponding to a probability of .05 (df = 2). The part of the null hypothesis pertaining to information sources was rejected.

There is a striking similarity between the percentages for counselor visits among each of the research subsamples, as the percentages appear in Table 10. In this case χ^2 is only 1.355 (df = 2), which is not statistically significant.

<u>Conclusions and discussion</u>.--The above results suggest that boys who utilize more than one or two information sources in arriving at a vocational choice are more likely to make a realistic choice than boys who do not use as many sources. However, it would be incorrect to conclude that the more sources they use the more realistic their choice

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Number of Sources	Incongruent (N=41)	Congruent (N= 46)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2.4 34.2 29.3 12.1 19.6 0.0 2.4 0.0 0.0	0.0 6.5 43.5 19.6 17.4 2.2 4.3 2.2
Total	100.0	100.0

TABLE 9.--Percentage of respondents classified by occupational choice-interests congruency and number of information sources

will be.

 χ^2 = 7.856, p <.05 (one-tailed test)

The findings also suggest that the number of visits which boys make to confer with their counselor during their junior year has little or nothing to do with how appropriate the boys' tentative choices are.

The hypothesis concerning counselor visits is based on two assumptions. First, to make a realistic occupational choice, boys must be able to bring what they know about themselves into line with what they are learning about the world in which they live. Second, by conferring with their counselees, high school counselors help them arrive at a realistic choice through promoting the above process. Because Ginzberg's data, as well as most of this study's other results support the first assumption, this finding's failure to support the hypothesis is probably due to a weakness in the second assumption.

TABLE 10.--Percentage of respondents classified by occupational choice-interests congruency and number of counselor visits

Number of Visits	Incongruent (N= 41)	Congruent (N = 46)
0	12.2 26.8 29.3 19.5 7.3 2.4 0.0 0.0 2.4	8.7 28.3 30.4 13.0 2.2 10.9 2.2 0.0 4.3
- Total	99•9	100.0

 $\chi^2 = 1.355$, p > .05 (one-tailed test)

The individual counseling of the guidance workers involved in this study may be ineffective in promoting tentative vocational choice-interests congruency. This statement could be true regardless of how effectively the counselors help their clients regarding the other important elements in making an appropriate occupational choice. There are at least three possible reasons why the guidance workers' individual counseling may be ineffective in promoting occupational choice-interests congruency. First, the counselors feel that vocational interests are not an important element in the occupational choice process. Second, the students ignore or are unable to use the information which their counselor gives them about their interests. Third, the data from the Kuder Preference Record-Vocational, which is administered to the students and presumably used for counseling purposes, is not highly correlated with the new Kuder Preference Record-Occupational used in this study.

It is quite possible, on the other hand, that the high school counselors are very effective in promoting the occupational choice process but in ways not measured by the number of counselor visits boys make in their junior year. Perhaps if younger students had been studied, the results would have supported the hypothesis. Maybe it is the quality of the visits rather than their number which is crucial in this regard. The results imply that the effect which high school counselors have upon their clients' vocational choice-interests congruency should be studied more thoroughly.

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CHAPTER VI

VOCATIONAL CHOICE-INTERESTS CONGRUENCY AND PRUDENTNESS-IMMEDIATENESS

The purpose of this study is to test a number of hypotheses. One of the hypotheses is that boys with a tentative occupational choice which is consonant with their measured vocational interests are more prudent than boys with a choice which is not consonant with their interests. As explained earlier,* the term prudent is used to represent the following attitudinal traits which Ginzberg and his associates (1951) concluded were characteristic of youths who reached the realistic period in their development: time perspective, postponement of gratification, and compromise. The hypothesis is also consistent with Tetreau's (1964) findings that open-mindedness is correlated with occupational preference-vocational interests congruency. The remainder of this chapter is devoted to a description of how the above proposition was tested.

<u>Measurement</u>.--Careful reading of <u>Occupational Choice</u> (Ginzberg <u>et al</u>., 1951) indicates there is a marked similarity between what its authors denote by the terms time

^{*}See page 30.

perspective, postponement of gratification, and compromise and prudentness, as the latter is measured by an instrument constructed by Edwards and Wilson (1958; 1959; 1961; Edwards, 1960). Likewise the inflexible adherence to extrinsic, immediate rewards and inability to formulate and consistently pursue remote, long-range goals about which Ginzberg has written appears to be synonymous with the immediateness which Edwards and Wilson purport to measure with their instrument. It was decided, therefore, to use their scale in testing the hypothesis concerning occupational choice-interests congruency and prudentness.

Edwards' and Wilson's prudent-immediate scale-hereafter referred to as the P-I scale--was constructed from twelve Likert-type items. The items were organized into three compound items using a modified Guttman scalogram analysis. The three-item Guttman-type scale has a reproducibility coefficient of .87 based on results from 3,750 high school students.

The developers of the P-I scale have offered two reasons why they feel their instrument is sufficiently reliable to be used for research purposes. First, after Guttman (1950, p. 311) Edwards and Wilson assert that the tolerable unidimensionality of their compound items is evidence that the scale is reasonably reliable. Second, when thirteen samples' responses to each of the twelve original items were ranked in terms of their popularity, the coefficient of concordance (W) between the rankings is .90.

The best evidence in support of the P-I scale's validity is that it predicts student grades in a manner one would expect from the nature of the variable the scale was designed to measure. Edwards and Wilson (1961, Appendix C, p. 21) present evidence that there is a positive, linear relationship between prudency and grades in academic subjects and a negative association between immediateness and grades. While the Guttman-type P-I scale was well suited for the use to which it was put by Edwards and Wilson, the instrument is not appropriate for the kind of analysis necessary for testing the above hypothesis.

This part of the study was designed on the assumption that the relevant hypothesis could best be tested by employing one of the most powerful available statistical tools. The robust difference-of-means parametric tests are not appropriate for analyzing scores from the Guttman-type P-I scale because the scores cannot exceed a range of 0 to 3. For this reason, the Guttman-type P-I scale was modified for use in this study.

In order to increase the number of items in the P-I instrument, the original twelve Likert-type items were used to make up the modified scale. The weights given to some of the items in the Guttman scale were re-assigned so that the largest weights always represented the greatest degree of prudentness. "I should prefer the live theater to movies if they were the same price," is one of the twelve items. A response which indicates strong agreement with this

statement was assigned a weight of six; whereas, a response representing strong disagreement received a weight of one. All the items were re-scored using the method just described, and the new scores were analyzed to test the hypothesis.

Data analysis.--The analysis consisted of comparing the mean P-I score for the congruent sub-sample with the mean score for the incongruent sub-sample. It was predicted that the congruent group would have the higher mean score so a one-tailed test was employed. In order to minimize the likelihood of committing a Type II error, the powerful \underline{t} test was used to estimate the reliability of the difference between the two means. Because of the difficulty of empirically demonstrating the validity of the assumptions underlying the \underline{t} test, the rigorous .01 level of significance was set for the analysis.

<u>Results</u>.--The mean prudentness scores for the congruent and the incongruent group are 45.614 and 41.395, respectively, and they are in the predicted direction. The value for <u>t</u> was found to be 2.532 (80 degrees of freedom), which is greater than the 2.39 associated with only 60 degrees of freedom. This was a one-tailed test with the level of significance set at the .01 level of confidence. The null hypothesis that the two sub-samples were drawn from the same population was rejected.

<u>Conclusions</u>.--The results just reported support the conclusion that boys with a tentative occupational choice

which is consonant with their measured vocational interests are more prudent than boys with a choice which is not congruent. To the degree that prudentness, as measured in this study, is the same as the cluster of concepts which Ginzberg calls time perspective, postponement of gratification, and compromise; the latter's theory of occupational choice is supported.

It is possible that the observed difference in the two sub-samples with regard to prudentness is due more to intelligence than it is to occupational choice-interests congruency. This possibility stems from the fact that the two sub-samples probably differ in ways other than congruency, and any observed differences in their statistics could be due to variables other than congruency. It was reported earlier that more than one writer on the subject of realism of vocational choice contend that scholastic ability is positively related to appropriateness of choice; therefore, the two sub-samples were compared in terms of this variable. The mean School and College Ability Test scores for the congruent and incongruent groups were compared in the same manner as those for the P-I scale scores just described. The observed difference of means is only 1.956, and the obtained t for this difference equals .085 with 84 degrees of free-The t associated with this many degrees of freedom is dom. between 2.660 and 2.617 for a two-tailed test and a probability of .01. The null hypothesis that there is no difference between the sub-samples with regard to scholastic

aptitude was retained. It appears that the superiority of the congruent group's members with regard to realism of vocational choice is more apt to be due to their prudentness than to any superiority in scholastic ability.

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CHAPTER VII

VOCATIONAL CHOICE-INTERESTS CONGRUENCY AND SOCIAL CLASS

The literature shows a considerable amount of agreement for the proposition that overaspiration is one of the major reasons for the lack of realism of vocational choice among youth. This overaspiration on the part of some young people probably stems from the fact that although they have been socialized by the larger society to value social mobility, they have not been properly socialized by the agents of socialization within their social class sub-cultures to play the roles which go with prestigeful occupations. This study focuses upon the kind of interests which are probably necessary for people to learn if they are to be reasonably happy in playing certain occupational roles.

The highest proportion of youth who have not been socialized to be professional workers and executives are probably to be found among the lower classes. Strong has shown there are statistically significant differences between the interests of manual workers and business and professional men. He has also shown there is a statistically significant association between the vocational interests of middle-class fathers and sons. It is quite possible,

therefore, that lower-class youngsters learn a pattern of interests which is similar to that of their father's but dissimilar from the patterns of middle-class fathers.

If the preceding analysis is correct, one would expect middle-class boys to demonstrate more realism of occupational choice than lower-class boys when vocational choice-interests congruency is used as a criterion of such realism. This is because lower-class boys probably tend to express the value of social mobility at the overt, verbal level while at the covert level they possess interests which are, by and large, characteristic of the occupations pursued by members of their same social class. This may be expressed in terms of the following testable hypothesis:

Boys whose fathers are professional workers or executives will have higher Differential Ratios on the KPR-O than will boys whose fathers are skilled, semiskilled, and unskilled workers when the Differential Ratios are based upon every boy's tentative occupational choice.

<u>Measurement of social class and vocational choice</u>-<u>congruency</u>.--Father's occupation was adopted as the criterion of social class, and the occupational information was obtained mostly from a questionnaire sent to each boy's parents in 1959. It was corroborated by data collected from the students and their school records. Edwards and Wilson (1961) used the data on father's occupation to classify the students according to the former's system of occupational categories.^{*}

*See Appendix D for a list of these categories.

Edwards' and Wilson's "unskilled manual labor" and "semi-skilled manual labor" categories together were used to identify the lower-class boys. Similarly, Edwards' and Wilson's "professional" and "executive" categories were combined for the purpose of identifying the middle-class respondents. This resulted in two sub-samples, one at each end of the occupational prestige hierarchy.

Vocational choice-interest congruency, which was used as an index of realism of vocational choice, was operationally defined in terms of Differential Ratios^{*} from the Kuder Preference Record-Occupational. The DR denoting the highest degree of congruency is represented by ++ followed by +10, +9, etc. The lowest degree of congruency is denoted by --, which is followed by -10, -9, etc.

<u>Analysis</u>.--The Differential Ratios for fifty-five respondents were classified into two frequency distributions. One distribution was for the twenty-four boys classified as lower-class, and the other distribution was for the thirty-one boys classified as middle-class. A onetailed Smirnov test was used to test the null hypothesis that the two groups were drawn from populations with equal Differential Ratios. The level of confidence was set at .05.

<u>Results and their interpretation</u>.--Table 11 shows the percentage of the lower-class boys and the middle-class

^{*}See pages 69-62.

Differential Ratios	Lower Class (N = 24)	Middle Class (N = 31)
$ \begin{array}{c} -10 \\ -9 \\ -8 \\ -7 \\ -6 \\ -7 \\ -6 \\ -5 \\ -4 \\ -3 \\ -2 \\ -2 \\ -3 \\ -2 \\ -4 \\ -3 \\ -2 \\ -4 \\ -3 \\ -2 \\ -4 \\ -3 \\ -2 \\ -4 \\ -3 \\ -2 \\ -4 \\ -5 \\ -6 \\ -7 \\ -6 \\ -7 \\ -6 \\ -7 \\ -6 \\ -7 \\ -7 \\ -7 \\ -7 \\ -7 \\ -7 \\ -7 \\ -7$	$20.8 \\ 0.0 \\ 4.2 \\ 0.0 \\ 8.3 \\ 0.0 \\ 0.0 \\ 8.3 \\ 8.3 \\ 0.0 \\ 4.2 \\ 12.5 \\ 8.3 \\ 4.2 \\ 4.2 \\ 4.2 \\ 0.0 \\ 0.0 \\ 0.0 \\ 0.0 \\ 0.0 \\ 0.0 \\ 16.7 $	6.5 0.0 0.0 3.2 3.2 3.2 3.2 5.2 0.0 3.2 3.2 5.5 0.0 3.2 3.2 5.5
Total	100.0	100.1

TABLE 11.--Percentage of respondents classified by social class and occupational choice-interests congruency

 $\chi^2 = 10.770$, df = 2, p <.05 (one-tailed test)

boys who were assigned one of the twenty-one possible Differential Ratios. The cumulative percentage of lower-class boys who received a DR of +3 or less on vocational choiceinterests congruency was 83.3 per cent compared to only 38.7 per cent for the middle-class boys receiving the same ratings. In other words, the percentage of lower-class respondents who made no better than a rating of +3 on occupational choice-interests congruency was less than half the percentage of the lower-class respondents who received a similar rating.

The difference between the above percentages is .446, when expressed as a proportion, and this is equal to a chi-square value of 10.770 (one-tailed). The latter value is considerably more than the 5.991 value for chi square associated with the .05 level of confidence. The null hypothesis was, therefore, rejected, and the above alternative hypothesis was accepted.

Conclusion and discussion .-- The findings from the preceding analysis support the conclusion that middle-class boys have tentative vocational choices which are more consistent with their inventoried vocational interests than do lower-class boys. The following two propositions have been offered to explain this generalization: (1) Young people who are socialized within all social classes internalize, to some extent, the mobility orientation shared by the larger society. When these youths are asked to report their tentative occupational choice or expectation, their responses reflect this mobility orientation somewhat independently of their chances of realizing their expectations. (2) The socialization processes in our social stratification system probably operate to insure middle class youngsters' learning of the patterns of interests associated with the most sought-after occupations to a greater degree than is the

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case with lower-class youngsters.

References

Edwards, T. Bentley and Wilson, Alan B. <u>A Study of Some</u> <u>Social and Psychological Factors Influencing Educa-</u> <u>tional Achievement</u>. A Final Report to the United States Office of Education, Department of Health, Education, and Welfare. Prepared by the Authors Pursuant to OE Contract No. SAE 7787. Berkeley, Calif.: Department of Education, University of California, June, 1961. (Mimeographed.)

CHAPTER VIII

APPARENT CRYSTALLIZATION OF TENTATIVE OCCUPATIONAL CHOICE

Measurement, Analysis, Results, and Conclusion

There is good reason to believe that college students who have made occupational choices which are consonant with their vocational interests have crystallized their decision to a greater degree than students who have made choices which are not consonant with their interests. It has been pointed out in Chapter III how this generalization is consistent with existing theory and how it has been supported by research findings. This generalization, however, may not be applied to the population studied in this investigation.

Ginzberg and his colleagues at Columbia have made the following very clear: high school boys have not had the experience necessary to synthesize their interests, values, and aptitudes with what they know about the world to as great an extent as college students. Therefore, the following research question has been posed: Will the boys comprising the congruent sub-sample differ from those making up

the incongruent sub-sample in terms of apparent crystallization of occupational choice?

<u>Measurement</u>.--Items g, h, 6, 7, and 8 of the questionnaire were made to tap crystallization of occupational choice. Wallace (1949) used similar items in his study. Items g and h are reproduced below:

- g. Please list below the things which you have decided might very well keep you from entering what you think is your future line of work.
- h. Please list below the things which you have decided would be <u>undesirable</u> about being in the kind of work you think you will enter.

Their use in measuring apparent crystallization of tentative occupational choice is based on the assumption that students with high crystallization of choice entertain fewer reservations about the nature of their chosen line of work than do students with low crystallization. When the responses to both the above items were summed for each respondent, the results ranged from zero to six. The students listing six disadvantages received the lowest rating for crystallization and the students listing no disadvantages were given the highest rating.

Questionnaire items 6, 7, and 8 are as follows:

- 6. How interested are you about entering the line of work you think you will follow?
- 7. To what extent do you feel you have what it takes to be successful in the line of work you think you will enter?
- 8. If you consider your answer to question "b" on the first page as your vocational aim, how satisfied are you with this aim?

They are aimed at identifying varying degrees of commitment to tentative vocational choice among the respondents. Each boy rated himself in terms of three possible levels of commitment. For example, he was asked to check one of the following phrases in response to question 6 above: (1) "only slightly interested," (2) "reasonably well interested," or (3) "very strongly interested".

<u>Analysis</u>.--The ratings described above were analyzed by cross-tabulating them according to occupational choiceinterests congruency. The Smirnov test was employed to take full advantage of the ordinal nature of the data being analyzed. Two-tailed tests were used, and .05 was the level of confidence adopted.

Results and their interpretation.--The 41 respondents in the incongruent group listed a total of 107 disadvantages regarding their expected occupation. The somewhat larger group of 46 congruent respondents listed only 105 disadvantages. All the boys reported from 0 to 6 reservations about their tentative occupational choice. The percentage of the respondents reporting each of these frequencies is shown in Table 12 for both the congruent and incongruent sub-samples. When the difference between the cumulative distributions of proportions for the sub-samples were determined, the largest difference was found to equal only .169. This value is considerably short of the .292 corresponding to a probability of .05 (two-tailed), and, consequently, it was not considered to be statistically

significant.

Reservations	Incongruent (N=41)	Congruent (N=46)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4.8 19.5 34.1 17.1 7.3 9.8 7.3	6.5 34.8 19.5 15.2 13.0 8.7 2.2
Total	99•9	99•9

TABLE 12.--Percentage of respondents classified by occupational choice-interests congruency and number of reservations concerning their chosen vocation

D = .169, p > .05 (two-tailed test)

The distributions for the incongruent and congruent groups shown in each of the three parts of Table 13 are all quite similar. The observed values of D for "self-rating of fitness," "satisfaction with occupational choice," and "interest in occupation chosen" are .103, .103, and .126, respectively. All three of these fall short of the .292 associated with the .05 level of confidence (two-tailed), and, therefore, not considered statistically significant.

<u>Conclusion and discussion</u>.--The findings support the conclusion that no difference between the congruent and incongruent groups exists with regard to apparent TABLE 13.--Percentage of respondents classified by occupational choice-interests congruency and ratings on three aspects of occupational choice crystallization

Self-Rating	Incongruent (N=41)	Congruent (N=46)
Fitness for Occup	oation Chosen	
Poorly fitted	14.6 63.4 22.0	4•3 67•4 28•3
	100.0	100.0
D=.103, p > .05 (two-te	iled test)	
Satisfaction with Occ	upational Choi	<u>ce</u>
Barely satisfied Reasonably well satisfied . Entirely satisfied	14.6 58.6 26.8	4.3 71.8 23.9
- Total	100.0	100.0

D=.103, p > .05 (two-tailed test)

Self-Rating	Incongruent (N=41)	Congruent (N=46)
<u>Interest in Occu</u>	pation Chosen	
Only slightly interested Reasonably well interested . Very strongly interested	12.2 43.9 43.9	6.5 37.0 56.5
Total	100.0	100.0

TABLE 13-Continued

D=.126, p > .05 (two-tailed test)

crystallization of tentative occupational choice. This indicates that, unlike university men students, eleventh-grade boys with an occupational choice which is consonant with their inventoried interests have not crystallized their choice to a greater degree than their classmates whose choice is not consonant with their interests.

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CHAPTER IX

SUMMARY OF CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Summary of Conclusions

Realism of occupational choice.--Ginzberg and his associates have conceptualized realism of occupational choice as a developmental period through which young people typically pass before crystallizing their vocational decision. These writers have described this period as one in which youth begin to modify their tentative occupational choices in terms of their increasingly expanding knowledge of the world around them. Before reaching this stage, young people make their choice primarily in terms of their interests and values.

On the basis of the study's findings, it is possible to state certain conclusions regarding the relationships between realism of occupational choice and selected variables. The conclusions provide evidence about the validity of Ginzberg's and his associates' theory, and they point to further research.

A positive relationship exists between the following variables: (1) ability to estimate the agreement between one's measured vocational interests and the interests of men

in the occupation one has tentatively chosen, and (2) congruency between inventoried vocational interests and tentative occupational choice. Such a relationship is consistent with Ginzberg's theory because the ability to compare one's interests with the interests of others is a necessary condition for bringing one's vocational plans into line with one's knowledge of the occupational world. The findings also show that a substantial number of boys are unable to make accurate estimates of how well their interests and the interests of others agree.

No relationship exists between these two variables: (1) ability to estimate the agreement between one's measured scholastic ability and the scholastic ability of one's classmates, and (2) tentative occupational choice-interests congruency. This conclusion is not directly relevant to realism of vocational choice, as defined by Ginzberg <u>et al.</u>, but the research results upon which the conclusion is based show that the respondents are capable of making rather good estimates of their academic ability compared to that of their peers.

There is a positive relationship between the use of school as the main source of information about one's chosen occupation and vocational choice-interests congruency. The conclusion refines Ginzberg's model of occupational choice by suggesting that realism of choice will vary according to the quality of the informational resources used to gain knowledge of the world of work.

An association exists between the following: (1) the number of sources of information used in making a vocational choice, and (2) the agreement between occupational choice and inventoried vocational interests. This is in line with the theoretical framework used in this study. It would be an oversimplification to conclude that the amount of knowledge which boys possess concerning the occupation of their choice is entirely the result of the number of informational resources they use. It was suggested earlier that the quality of resources also play a part in how much boys know about occupations; however, the evidence concerning the quantity of these sources of information is stronger than the evidence regarding the quality of the sources.

The number of times boys visit their counselor, as measured in this study, is not related to occupational choice-interests congruency. This should not be interpreted to mean that both a knowledge of self and of occupations is not a necessary condition for realism of occupational choice. There is a more plausible interpretation: knowledge of self and of occupations is not a function of the frequency of counselor visits. Therefore, the number of times students confer with their counselor during their junior year probably should not be used as a measure of how well students know themselves and various occupational roles.

This interpretation is somewhat disturbing. It implies that the high school guidance workers involved in this study are not performing their role as Warner, Havighurst,

and Loeb defined it in <u>Who Shall Be Educated?</u>. However, the relationship between counselors' individual vocational guidance in the high school and students' tentative occupational choice-interests congruency should be studied more before any conclusions are made about the effect of the former upon the latter.

There is a positive relation between prudentness and vocational interests-occupational choice congruency, and it was shown to be independent of scholastic ability. Boys who are prudent oriented, as the attitudinal trait has been measured in this study, are more apt to make a congruent choice than are boys who are immediate oriented. This conclusion would appear to support the theory of Ginzberg and his associates concerning the role which compromise, delayed gratification, and a sense of temporal order play in the process of occupational choice.

A positive relationship also seems to exist between social class and occupational choice-vocational interests congruency. It was demonstrated that high school boys from middle-class families have higher congruency scores than boys from lower-class families. It was suggested that this is the result of youths' differential socialization within the matrices of different social class sub-cultures coupled with youths' internalization of the social mobility value which is part of the American ethos.

Apparent crystallization of occupational choice .-- As it has been conceptualized by Ginzberg and his associates,

bona fide crystallization denotes the synthesis of values, interests, aptitudes, and objective reality which stems from appropriate experiences with these elements of occupational choice. It results in a commitment to a chosen occupation. Apparent crystallization lacks both the synthesis, based upon experience, and the commitment.

No contingency was found between apparent crystallization and vocational interests-occupational choice congruency. This conclusion is consistent with the theoretical frame of reference used in this study.

<u>Comparison of boys whose occupational choice is key-</u> ed for the KPR-O and the boys whose choice is not keyed.--Because almost forty-five per cent of the respondents who had a tentative vocational choice had to be eliminated from the analysis due to the absence of an appropriate key for scoring their responses, a comparison was made between the youths who were eliminated and the boys who were included in the analysis.

The keyed group tended to select major professional and executive vocations; whereas, the non-keyed group was more apt to choose lower and upper white-collar occupations. Kuder, like Strong, has over-sampled the most prestigeful occupations for which to construct keys. The keys which Strong designed for the SVIB are particularly well suited for his instrument because it has been used almost exclusively with university students. It does not appear likely that Kuder's new instrument will supplant the SVIB as a tool

for the college vocational counselor. The Kuder-Occupational's greatest potential seems to lie in the field of high school counseling where its relatively low cost brings it within the means of public secondary schools. But unless people who are responsible for the construction of the instrument's keys find ways of overcoming the bias in their sampling of occupations to key, this potential will probably not be realized. This bias works against boys who intend to enter the occupations which have been providing new opportunities for employment to replace the ones which have disappeared because of technological changes in our economy.

The keyed and non-keyed groups were not found to differ in terms of their members' socio-economic status, their scholastic ability, nor their need for vocational counseling.

Before listing some suggestions for further research, some of what was written earlier concerning the generalizability of the above conclusions will be briefly reviewed. The extent to which the conclusions may be interpolated to the population from which the research sample is presumed to have been drawn depends upon the extent to which the latter is representative of the former. The evidence indicates that the following respondents are probably overrepresented in the sample: Oriental boys who tend to make tentative occupational choices from among the professional occupations. Similarly, the following probably are underrepresented in the sample: (1) Negro students who tend to select low-status occupations and (2) Caucasian students whose families are geographically and, perhaps, socially mobile.

Suggestions for Further Research

Experimental studies .-- Some of this study's conclusions suggest further investigation of boys' ability to make estimates of the congruency between their interests and the interests of successful, satisfied members of the boys' tentatively chosen occupation. This skill must surely be a necessary condition for the making of an appropriate vocational selection, and it would be feasible to set up an experiment wherein the effect of certain independent variables upon the skill's development could be ascertained. One independent variable could be the use of the traditional Kuder Preference Record-Vocational Form employed in many public schools today. The other independent variable could be the use of the KPR-Occupational Form. It should be practicable to randomly assign certain students to one or the other of two treatment groups and to control the students' socioeconomic status by the selection of appropriate sub-samples. The data should be collected through interviews, for the most part.

The experimental study described above could serve two purposes at least. First, it would produce objective evidence regarding the relative advantages of using two different kinds of instruments for measuring vocational interests. Second, it should clarify why the number of times a student receives vocational counseling from his counselor is not related to his vocational interestsoccupational choice congruency.

<u>Correlational studies</u>.--The study's conclusion regarding the school as a source of vocational information demands further study of the relative value of selected informational resources. A replication of this part of the present investigation should include the use of a larger sample and of interviewers to collect some of the data. If such a replication were to produce the same conclusions suggested by this study, it would be possible to formulate additional hypotheses to be tested experimentally. This might involve the use of group guidance for the parents of selected boys and of occupational orientation classes as experimental treatments.

The conclusion regarding apparent crystallization of occupational choice suggests a longitudinal study of both those boys who go on to college for professional training and those who go into the labor market immediately after graduation. Such a study should be designed to tell us whether or not vocational choice-interests congruency increases as bona fide crystallization of occupational choice is achieved. The results should produce a refinement of the theory outlined in <u>Occupational Choice</u>.

The investigation reported here also suggests the possibility of studying over-aspiration and under-aspiration

of occupational choice using the same type of research design. The respondents' scholastic ability and socioeconomic status could be experimentally controlled, and some of the data could be obtained through interviews. The subsample of over-aspirers among the incongruent group would be compared to the under-aspirers in terms of the respondents' parents' ambition, knowledge of occupations, personality adjustment, and high schools' social class culture. The information gained from such a study should be useful to school authorities and counselors wishing to promote the kind of vocational guidance program described twenty years ago in Who Shall Be Educated?.

APPENDIX A

QUESTIONNAIRE ON VOCATIONAL INTERESTS

NAME	(print)_				COUNSELOR
	(last)	(first)	(initial)	

<u>DIRECTIONS</u>: After you are sure what each question below asks for, please write complete and readable answers in the blanks provided.

a. If you had the chance to go into any kind of work you wanted when you are all through with your education, what line of work would you choose? Think only of what you would like to do, what you would be happy at. Do not think about the abilities required or the training which is necessary to get into this kind of work. Just write down the name of the line of work you would like to be in. If you want more than one, write them down, but put your favorite one first.

b. People sometimes think about what they would like to be, although they don't really believe it could come true. They usually have a fair idea of what they <u>actually</u> will do. Now think about what you will really be when you are no longer a student. What line of work do you <u>actually think</u> you will be in at that time? Give a <u>specific</u> line of work. For example, write "plumbing contracting" not "plumbing business," write "TV repairing," if that is what you mean, rather than just "electronics," and use the words "mechanical engineering" instead of only "engineer". You may put down more than one kind of work, if you wish, but put the one which you think is <u>most likely</u> to come true first.

c. Although it is very difficult to know who or what influences our choice of a line of work, it is much easier to know from where we got our information about the kind of work we think we may follow. There are a number of possible sources of such information but any two boys are not likely to have gotten their facts from exactly the same sources. Please check (\checkmark) the following to show your source or sources of knowledge about the work you think you will enter:

- 1.____family
 2.____relatives
 3.____friends
 4.____counselors
 5.___teachers
 6.___books, magazines
 7.___shop or class work
 _____in school
- 8.___movies, TV programs of men in the line of work

9.____experience working on a job similar to the line of work you think you will follow --don't overlook regular work for parents 10.____watching men doing the line of work 11.____other (specify)_____

- d. Draw a line under the one answer in question "c" above which has been your most important source of information about the kind of work you think you will enter.
- e. If you checked answer number "9" in question "c" above, please write the following in the spaces below: (1) the nature of the work done, for example, "putting stock away in a drugstore" instead of only "drugstore;" (2) the number of hours averaged a week; and (3) the number of weeks you put in on each job.

Kind of Work	Average Hours a Week	Length of the Job in Weeks

- f. Since the beginning of school this year, how many times have you talked with your counselor either about a future line of work or about school matters related to a future vocation for yourself?
- g. Please list below the things which you have decided might very well keep you from entering what you think is your future line of work:
 - 1._____

2.

	3
h.	Please list below the things which you have decided would be <u>un</u> desirable about being in the kind of work y think you will enter.
	1
	2
	3
<u>DIR</u> phr to	ECTIONS: After each question below, check (\checkmark) the ase which best answers the question. (Pay no attention the extra numbers in the margin.)
1 - 5. 6.	4. 1 How interested are you about entering the line of work you think you will follow?
	1 only slightly interested
	2 reasonably well interested
	3 very strongly interested
7.	To what extent do you feel you have what it takes to b successful in the line of work you think you will ente
	1 poorly fitted
	2. well fitted
	3 very well fitted
8.	3 very well fitted If you consider your answer to question "b" on the fir page as your vocational aim, how satisfied are you wit this aim?
8.	<pre>3 very well fitted 3 very well fitted If you consider your answer to question "b" on the fir page as your vocational aim, how satisfied are you wit this aim? 1 barely satisfied</pre>
8.	<pre>3 very well fitted If you consider your answer to question "b" on the fir page as your vocational aim, how satisfied are you wit this aim? 1 barely satisfied 2 reasonably well satisfied</pre>

- 9. How do you think your interests compare with the interests of men doing the kind of work you expect to do?
 - 1. ____ different
 - 2. ____ neither different nor the same
 - 3. somewhat the same
 - 4. ____ very much the same
- 10. How do you think you compare with other students your own age when it comes to the following things at school: (1) understanding the meaning of sentences and knowing the meaning of words in reading assignments, and (2) working number problems and solving word problems in math?
 - l. low
 - 2. ___ low-average
 - 3. ____ high-average
 - 4. ____ high

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APPENDIX B

LETTER DISTRIBUTED TO ALL BOYS IN THE SAMPLE Dear Student:

All of you boys who cooperated in a University of California research study in 1959 and 1961 are being offered some extra help in deciding what line of work you should follow. This help is a chance to find out the following: (1) your main interests at this important time in your life, and (2) how your interests compare with those of men in the line of work you think you will enter.

School counselors have known for a long time that a man's job satisfaction depends a lot upon the extent to which his interests are like the interests of men with whom he works. <u>Choosing a line of work is one of the most impor-</u> <u>tant decisions you will make in your life</u>. You owe it to yourself, therefore, to take advantage of this offer.

These two things are all you need to do in order to receive this help: (1) take these materials and some time today when you can work on them by yourself for about an hour in a quiet place, do what the direction sheet inside the envelop tells you to do, and (2) return the completed materials, tomorrow morning, to the same place you received them.

You may obtain the results from your counselor during the week of June 1 or next Fall, whatever you like.

DIRECTIONS

So that you may learn about your main interests, it will be necessary to do the following things <u>in the order in</u> which they are listed below:

- On the black-printed answer sheet, print the following only: (1) your name and (2) your counselor's name, in the space after the words "SCHOOL OR GROUP".
- 2. Read the directions on the first page of the enclosed orange booklet with care.
- 3. Using the answer sheet, answer all the orange booklet's questions as directed on its first page. Be sure to mark your answers on the answer sheet, not in the booklet. Your answers will be worthless if you do any of the following: (1) try to answer the questions the way you think the men in a certain line of work would answer them; (2) work with someone else in answering them; or (3) fail to follow the directions in the booklet.
- 4. Read the questions on the enclosed purple-printed form entitled "QUESTIONNAIRE ON VOCATIONAL INTERESTS" carefully and answer them as accurately and completely as possible.

APPENDIX C

PRUDENT-IMMEDIATE SCALE

DIRECTIONS: Underneath each statement below, place a check before the answer that corresponds most clearly with your attitude toward the statement.

- In a social studies course, 4. 1. I would rather have the reasons why the U.S. didn't join the League of Nations explained to me than try to figure it out.
 - 1.____strongly agree 2.____moderately agree 3.____slightly agree 4.____slightly disagree 5.____moderately disagree strongly disagree
- 2. I should prefer the live theater to movies if they were the same price.
 - 1.___strongly agree 2. ____moderately agree 3.____slightly agree 4.____slightly disagree 5. moderately disagree 6. strongly disagree
- Sometimes when a fellow 3. is out with the gang, he pretty well has to do a few things he knows he really shouldn't.
 - 1.____strongly agree 2.____moderately agree 3.____slightly agree 4.____slightly disagree 5. moderately disagree 6. strongly disagree

- Mercy killing should be legalized for cases of extreme suffering where there is no hope for cure.
- 1.___strongly agree 2. moderately agree 3. slightly agree 4. slightly disagree 5. moderately disagree 6. strongly disagree
- 5. When talking with my friends in the evening I'd rather talk about people we know and have fun with than talk about religion or philosophy.
 - 1.____strongly agree 2.____moderately agree 3. ____slightly agree 4. ____slightly disagree 5. ____moderately disagree 6. ___strongly disagree
- 6. The opinion of friends helps more than reading in making up my mind.
 - 1.____strongly agree 2.____moderately agree

 - 3.____slightly agree 4.____slightly disagree 5.____moderately disagree
 - 6.____strongly disagree

7. The foreign policy of our 10. government should be based on high moral principles even though this may entail a loss of strategic power of prestige.

1._____strongly agree
2.____moderately agree
3._____slightly agree
4.____slightly disagree
5.____moderately disagree
6.____strongly disagree

8. I frequently think about the reasons for other people's misbehavior instead of reacting with irritation.

> 1._____strongly agree
> 2._____moderately agree
> 3._____slightly agree
> 4._____slightly disagree
> 5._____moderately disagree
> 6.____strongly disagree 6. strongly disagree

9. I never worry about how things are going to work out--they usually seem to take care of themselves.

1.____strongly agree
2.____moderately agree
3.____slightly agree
4.____slightly disagree
5.____moderately disagree
6.____strongly disagree

- An impulsive person is warm and sincere; one who analyzes his emotions is cold and "phony".
 - 1._____strongly agree
 2._____moderately agree
 3._____slightly agree
 4.____slightly disagree
 5._____moderately disagree
 6.____strongly disagree
- 11. A business man should make his decisions strictly according to the interests of his business. He should not worry about what happens nationally to wages and prices.

1._____strongly agree
2._____moderately agree
3._____slightly agree
4.____slightly disagree
5._____moderately disagree
6.____strongly disagree

12. Science has definitely not been able to show that colored races are inferior to white races.

1._____strongly agree
2._____moderately agree
3._____slightly agree
4.____slightly disagree
5._____moderately disagree
6.____strongly disagree

APPENDIX D

OCCUPATIONAL CATEGORIES

- 1. Unskilled and semi-skilled manual labor: longshoreman, gardener, fry cook, teamster, machine operator, filling station attendant, restaurant worker, janitor, meat cutter.
- 2. <u>Skilled manual labor</u>: carpenter, butcher, electrician, machinist, printer, plumber, jeweler, shoe repair.
- 3. Lower white collar: sales clerk, foreman, stenographer, beautician, policeman, fireman, barber, mailman, model, union dispatcher, bar-tender, forester, bus driver, guards, domestics, soft-drink, milk, or bread salesman, truck-drivers, draftsman (copy), stewardess, athlete (pro).
- 4. Upper white collar: salesman, store manager, public school teacher, nurse, social welfare worker, librarian, real estate broker, laboratory technician, pharmacist, pilot, buyer, fire chief, chief of police, commercial artist, popular entertainer (dance band musician, night club singer, etc.), probation officer, interior decorator, insurance agent, design draftsman.
- 5. <u>Small business--self-employed</u>: barber shop, construction contractor, service station, beauty shop, real estate, plumbing shop, repair shops.
- 6. <u>Merchants--self-employed</u>: grocers, restaurant or bar owners, wholesale merchants, export-import businesses, department or variety store owners, broker, contractor.
- 7. Farmers, ranchers--self-employed.
- 8. <u>Professionals--salaried</u>: engineer, college professor, school principals and superintendents, minister, journalist, staff officer (major, colonel).
- 9. <u>Professionals--self-employed</u>: doctor, lawyer, dentist, architect, C.P.A., veterinarian, author.

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- 0. <u>Executive</u>: Corporation presidents, vice-presidents, district representatives of large firms, diplomat.
- x. Farm laborer.
- y. <u>NA</u>, <u>unemployed</u>, <u>retired</u>, <u>deceased</u>.

