Occupational Differentiation among White Men in the First Decade after High School

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Most research on career development is concerned with the fate of individuals, but portraits of the heterogeneity and development of whole populations or aggregates of individuals can also be useful for understanding the needs and development of different client populations. Two population-level concepts are proposed and defined: differentiation and distribution. This report then charts the rate at which occupational differentiation proceeds among 3730 young white men and investigates the personal and family attributes by which these men are distributed, or distribute themselves, to jobs. Data from the National Longitudinal (Parnes) Survey of the Labor Force Experience of Young Men are used to examine employment among men aged 16 to 28 in different levels and fields of work. Results suggest that the rate of labor force participation stabilizes in the early twenties, differentiation among men by education and the distribution of men among different broad levels and fields of work stabilize by the mid-twenties, and the sorting of men with different socioeconomic backgrounds into different occupational groups continues through the late twenties at which age it appears to have been largely completed. Discriminant analyses suggest that the distribution of men to jobs is primarily along an occupational status dimension, and secondarily according to field of work. Among the variables used in the analyses, academic achievement is the major dimension by which men are sorted or sort themselves to different jobs.

Career development in the first 10 years after high school in large measure forecasts the course of the remaining decades of a person's career. During these years young people make vocational choices and compete not only for the jobs they desire but also for the required education and training. Some youngsters are able to establish themselves

in their preferred careers, but many find themselves rooted in low-level, uninteresting, or dead-end jobs.

Theories of career development deal with this critical early period of career development and many hypothesize different stages of development (Super, 1957, 1968; Ginzberg, Ginsburg, Alexrad, & Herma, 1951; Levinson, Darrow, Klein, Levinson, & McKee, 1974; Joordaan, 1974). For example, Super (1968) proposes the following stages (although the second and third are most relevant to the first decade after high school): growth, exploration, establishment, maintenance, and decline. These theories stress the dynamics of career development and have generated much interest as well as some research.

As helpful as these theories may be in the long run, it is worthwhile noting that they deal with the development of *individuals*. Indeed, most theoretical and empirical work in vocational psychology is concerned with the individual. The theories have had little to say about what happens to *populations* of individuals. If we think of all the stages of development or all the employment situations that different people in a population (e.g., a particular age group) might be in, we could ask what proportion of that population is in each of these situations. Such knowledge would be useful for understanding what problems or situations are normative for different groups, the client problems counselors can expect to confront in different treatment settings or populations, and the modal or common patterns of career development that might exist.

This paper examines a population of young white men in their first decade after high school. Specifically, we examine their progress in becoming employed, the types of employment they hold, and how the kind of work they hold is related to several educational and family background characteristics. Before describing the study it is useful to introduce a few concepts. The emphasis on populations as a way of looking at vocational development requires a set of concepts to characterize the evolution of a population; current developmental concepts such as the stages described above usually apply only to individuals. There are many concepts we could use to describe career development processes in populations, but we will focus here on two that stress the *dynamics* of development: differentiation and distribution.

We use the term *differentiation* to refer to the process by which individuals in a population become increasingly differentiated or different from one another in personal job-relevant characteristics such as level of educational attainment, type of training, kinds of work experience acquired, or kinds of jobs held. Another way of stating this concept is to say that it refers to the process by which people in a group become more heterogeneous. To avoid confusion it should be noted that the term differentiation has been used in other contexts of vocational develop-

ment, though usually with a different meaning. Differentiation is a central concept in Holland's (1973) theory of careers, but it refers to the peakedness of a person's profile of interests (i.e., the extent to which an individual is clearly interested in some fields rather than others). Developmental theorists sometimes use the term differentiation when they speak of the formation of self-concept or identity. In this context, differentiation is the process by which children come to differentiate themselves from their environment and to recognize how they are similar to or different from other people. This usage is related to our definition, because it reflects the person's recognition of differences among individuals and perhaps the person's efforts to become more different from others in the environment.

We use the term *distribution* to refer to the process by which individuals are sorted, or sort themselves, into jobs. This concept presupposes an occupational structure consisting of a fairly fixed number and variety of jobs to which people are distributed. Distribution processes encompass the shifting of individuals into and among these positions in the structure. Knowing something about what types of people are distributed (or distribute themselves) to different positions in the structure helps us predict what will happen to different types of people if the distribution processes remain the same over time. It also provides clues about what attributes of people and jobs are most important in explaining the distribution patterns we find, and how strongly people's backgrounds are linked to later attainment.

Much research has been done on the differentiation and distribution of populations during career development, but most of it has been conducted in other disciplines—primarily sociology—and has not been directly related to concerns in vocational or counseling psychology. One exception is the Career and Occupational Development assessment of the National Assessment of Educational Progress that assessed vocational knowledge, attitudes, and interests in 9-, 13-, 17-year-olds, and young adults (e.g., see Tiedeman, Katz, Miller-Tiedeman, & Osipow, 1977). Previous work of our own and of our colleagues examining the development of aspiration–job congruence, job and aspiration stability, employment patterns, and the predictive validity of aspirations and jobs has also been an exception (G. Gottfredson, Holland, & Gottfredson, 1975; G. Gottfredson, 1977; G. Gottfredson & Daiger, 1977; L. Gottfredson, 1978a, b, 1979; L. Gottfredson & Becker, 1981).

The distribution (also referred to as the allocation) of people to jobs has been a central concern in sociology for two decades, usually under the rubric of social stratification and intergenerational mobility. That field has dealt primarily with differentiation and distribution along a vertical dimension—occupational prestige or status—which makes it a

narrower conception of the occupational structure than that used here. The research nevertheless clearly reveals some major dimensions along which people are sorted. In this research estimates are often made of the degree to which sons "inherit" the occupations of their fathers and of the relative importance of socioeconomic versus educational or intellectual advantages in determining occupational status attainment. For example, status attainment researchers have provided much evidence that years of education, IQ, and socioeconomic background (though primarily the former) are criteria by which people are sorted, or sort themselves, into different levels of work (Alexander & Eckland, 1975; Duncan, Featherman, & Duncan, 1972; Sewell & Hauser, 1975; Sewell, Hauser, & Featherman, 1976). The correlation of fathers' and sons' adult occupational status is generally .3 to .4, and the correlations of sons' status with sons' years of education and IQ are, respectively, .6 and .4.

Although the fact that sorting by education and family background is well documented, the rate at which it occurs has not been systematically investigated. And, as mentioned above, most previous sociological studies of distribution have concentrated on status of work and ignored field or type of work, although the latter is of particular interest in vocational and counseling psychology. For example, the following questions about differentiation and distribution have received little attention. How does the type (field) and level (status) of work people typically do change during their first decade out of high school? L. Gottfredson (1979) has provided a portrait of how the fields of work men are employed in change during their twenties. (That study was conducted with the same sample of men as the present study.) That study had little to say, however, about the background of the men who ended up in different types of work, that is, about distribution processes. Furthermore, other studies (L. Gottfredson, 1980b; L. Gottfredson & Becker, 1981) have shown that the different Holland fields of work differ considerably in the levels of work they encompass (e.g., most realistic work is low level and most investigative work is high level), and that it is important to characterize occupations by both field and level in studies of career development (see also Roe's, 1956, conception of jobs). Another question is, how rapidly and evenly does distribution according to socioeconomic and educational advantage proceed? As noted above, there is ample evidence that distribution according to these attributes does occur, but we know little about at what rate it occurs and how far advanced it is by different ages.

In this paper we examine such questions. In particular, for different ages between 16 and 28 we examine: (a) the extent to which men are employed and in which fields and status levels of work they are employed, (b) the extent to which men become increasingly differentiated from one another in job-related attributes, and (c) the importance of various personal and family characteristics for distributing men to different types and levels of work.

METHOD

Data

Data on a nationally representative sample of 3730 white men aged 14 to 24 in 1966 were obtained from the National Longitudinal Survey of the Labor Market Experience of Young Men (Parnes, Miljus, Spitz, & Associates, 1970). The men were interviewed every year for over 5 years, and the surveys provide extensive data on educational and labor market experiences for each of these years. The men were not surveyed during the years they were in military service. This study used data from survey years 1966 to 1971.

The analyses reported here are based on comparisons among different age groups. Because of the small number of men in each age cohort in 1966, the labor force participation of men of different ages was examined without regard to cohort, that is, without regard to which year it was that they were a particular age. For example, the jobs of men aged 18 in *any* year were compared to the jobs of men aged 20 in any year regardless of the survey year during which this information was obtained. This means that a man could be classified into as many age groups as years he was in the survey. Because only every other age group was included in the analysis (for reasons of cost), three is the maximum number of age groups in which a man could be included.

Occupations were classified by both type and level. Holland (1973) categories were used to describe type or field of work. Occupations in the Parnes data were classified according to 1960 detailed census occupational titles; L. Gottfredson and Brown (1978) provide a translation of these 1960 titles into Holland codes. Occupations were classified according to status level using Duncan (1961) socioeconomic index (SEI) scores. These SEI scores were already available in the Parnes data set and are the best available for 1960 census titles, so no recoding on our part was necessary. Duncan SEI scores have been the most widely used measure of occupational status in the sociological literature, and they are based on ratings by the general public of the general desirability of different occupations.

For most analyses, occupations were classified simultaneously by both type and level producing a multidimensional classification. In this multidimensional scheme, occupations were classified into one of eighteen groups defined according to three levels of prestige (low: 0–29; moderate: 30–59; and high: 60 or more points on the Duncan SEI) and six types of work. An examination of the data showed that 90% or more of the men in each age group are found in only seven of the possible eighteen

groups: low-level realistic work (R Lo), moderate realistic (R Mod), moderate conventional (C Mod), moderate enterprising (E Mod), high enterprising (E Hi), high investigative (I Hi), and high social (S Hi). Therefore, most of the analyses use only these seven groups. This distribution of most men into fewer than half of the potential multidimensional categories of work is not peculiar to young men, but largely reflects the fact that type and level of work are not independent dimensions. L. Gottfredson (1980b) shows a similar pattern for workers in general. (Fewer than 2% of men are in artistic work so this field is not singled out in any of the analyses.) Men in the three moderate-level groups are on the average equal in status, as are men in the three high-level groups; the mean status of men in each of the seven groups is, respectively, 17, 41, 41, 45, 72, 74, and 71. Sample occupations in each of the seven groups are as follows: R Lo—bootblacks, assemblers, meat cutters, and brickmasons; R Mod—machinists, firemen, mail carriers, and electrotypers; C Mod—clerks, telephone operators, and bookkeepers; E Mod—deliverymen, sales clerks, farm managers, and store floor managers; E Hi—insurance adjusters, purchasing agents, public administrators, and lawyers; S Hi—librarians, teachers, social workers, and psychologists; I Hi—engineering technicians, chemists, civil engineers, and physicians. Evidence for the construct validity of the Holland, Duncan SEI, and the multidimensional schemes are reviewed in L. Gottfredson (1980a, b).

No distinction is drawn in the analyses between men working full time and those working only part time; both groups are included.

Measures of social background, mental ability, and educational attainment were included in the analyses because they have received the most attention in previous sociological studies of the distribution of people to jobs. Socioeconomic background was measured by mother's and father's years of education and father's occupational status when the respondent was 14 years of age. Mental ability test scores were obtained from the last high school attended. Scores were not all from the same test (about 30 tests are represented), so scores were standardized to a common metric (Herriott & Kohen, 1974). The scale used in these analyses consisted of a 9-point scale indicating the stanine in which the IQ score was estimated to fall. Measures of educational attainment included high school curriculum (college preparatory or not) and years of education completed. Respondents were also characterized according to whether or not they reported being currently enrolled in school and whether or not they had ever received any vocational or technical training. Father's field of work, the respondent's aspirations for status and field of work (in the previous year), and the respondent's job value (measured in 1966) were also included in some analyses. Job value referred to whether the respondent placed more emphasis on making money than on liking a job as a reason for choosing jobs; it might be considered

a measure of preference for extrinsic versus intrinsic job rewards. Each of these variables was assumed to influence the type and level of work held. Years of education, vocational training, and respondent's occupational type and status of work change from year to year for many men; in these analyses the most recent measure of each of these variables is used. Aspirations were always measured in the previous year, that is, 1 year before type and level of job were measured. IQ, parental variables, and job value were recorded only once in all the survey years.

Analyses

All analyses were performed separately for each age group to show the progress of occupational differentiation and distribution with age. The first two analyses document differentiation by employment status (employed or not), Holland type of work held, status level of work held, and educational attainment. The other analyses are designed to reveal the process of distribution to jobs according to the socioeconomic and educational backgrounds of the men. They include (a) correlations of status of men's current or last job with background variables, (b) percentage of men with high IQs in the different types and levels of work, and (c) discriminant analyses (Overall & Klett, 1972) among the seven major occupational groups. The first distribution analysis is designed to show how occupational status attainment becomes increasingly associated with background variables among older men. The second distribution analysis with IQ illustrates several aspects of how this association increases and how it is related to type as well as to level of work. The third analysis examines which background factors best distinguish among men in the seven major occupational groups. The discriminant analyses are discussed further below.

Regression analysis has typically been used to estimate multivariate models of occupational attainment because the criterion of occupational achievement has generally been a status score on a single vertical dimension. The occupational groups in this study could not be ordered on a single scale because some of the groups differ by type but not by level of work. Differences among the seven categories of work were therefore examined using discriminant analysis because this method of analyzing differences among groups does not assume any single hierarchical ordering. The object of the discriminant analyses was to see if the personal and family characteristics associated with working in one occupational group rather than another change from one age to another, to ascertain which of these characteristics are most useful in distinguishing among men in the different groups, and to ascertain if different categories of work at the same status level draw different kinds of men.

Five different theoretical models are compared in the discriminant analyses to learn more about the role of status- versus field-related pre-

dictors in explaining status and type of work held at different ages. Model 1—the basic model—consists of variables suggested by the status attainment approach. These include parents' level of education and father's occupational status as well as respondent's IQ, years of education completed, vocational training, high school curriculum, and school enrollment status. Models 2 and 3 add variables to the basic model that vocational research would suggest also are important. Model 2 includes father's field of work as well as the variables from Model 1. Father's field is coded into four dummy (1/0) variables: investigative versus other, social versus other, enterprising versus other, and conventional versus other. The realistic category is represented by a zero score on all of the four dummy variables just mentioned (as is required for one response category when using dummy variables). Very few fathers were in artistic work and they are included in the realistic category. Model 3 includes the respondent's job value as well as the variables in Model 2. Job value refers to respondents saying they prefer jobs because they pay well rather than because they like them. Models 4 and 5 add aspirations to the more basic models: Model 4 includes aspirations for status of work; Model 5 adds aspirations for field of work. Status aspirations were coded according to Duncan's SEI scores. Aspirations for field of work were represented by four dummy variables: investigative, social, enterprising, and conventional aspirations.

To maintain reasonable sample sizes for the discriminant analyses, values were imputed for missing data for all variables in Model 1. Means for the variables were calculated separately within each age group for each of the seven major occupational groups, and men with missing data were assigned the mean value for their own age–occupational group. The percentages of cases with missing data in the seven occupational groups varied by predictor and sometimes by age group: years of education and current enrollment status—0%; father's occupational status—5 to 7%; father's and mother's education—increasing, respectively, from 12 and 5% to 28 and 15% with age; IQ—20 to 31%; and training—decreasing from 39 to 8% with age.

Imputing the mean score for the group is not the ideal way to impute missing data. Hertel (1976) has argued that it is better to impute a score chosen at random from other members of that group for which data are present or to use a regression procedure to predict the missing score rather than to impute the mean for that group. Imputing the mean artificially enhances the discriminability of the groups. This effect is easily visualized by realizing that imputing the mean contributes only to variance between the groups and not at all to variance within those groups. We chose the less ideal group-means method for reasons of cost. Although this results in overestimating the differences between men in the

different groups, we guess that the overestimation is rather small. The results to be presented later show that by far the most important discriminating variable is years of education, but no data are missing for that variable. Other discriminators—particularly IQ and vocational training—must be interpreted more cautiously because of the high rates of missing data on those variables.

The statistic kappa (Cohen, 1960) is used to assess the ability of the discriminant functions to predict occupational group membership. Kappa is a measure of categorical agreement and it indicates the degree of greater-than-chance agreement. The relative abilities of the five models to predict occupational groups are compared using kappa.

Limitations

Other limitations should also be pointed out. The most important limitation is that we have not disentangled period, cohort, and age differences. This survey was conducted during the years 1966 to 1971. These were unusual years in at least two ways: (a) the economy was in an upturn and unemployment levels were relatively low and (b) the Vietnam war drew many young men into the military and out of the civilian labor force. Today's less favorable labor market contrasts sharply with the situation the young men in this survey faced. The military involvement of many men in the sample also means that nonresponse is higher among some age groups than among others.

The men have been grouped by age and the analyses done in a way that assumes differences among birth cohorts (for example, differences between men aged 20 in 1966 and men aged 20 in 1971) are negligible. However, there actually are some differences by cohort in IQ, education, and father's education and occupational status (L. Gottfredson, 1980a). For example, 18- to 24-year-olds in 1966 had an average of 12.3 years of education, whereas 18- to 24-year-olds in 1970 had an average of 12.7 years of education. These differences are not a result of differential attrition in the sample. Although we cannot be sure, we suspect that the foregoing differences primarily reflect differences across the birth cohorts in who was sampled or had missing data rather than changes over time in the characteristics of those cohorts. Because the four variables mentioned above are all highly correlated in the general population, all four would appear to rise over time if the original sample either underrepresented high-IQ men among the older cohorts or if it underrepresented low-IQ men in the younger cohorts. The differences in IQ among the cohorts in our sample are unlikely in the general population, particularly because they run counter to the widely publicized decline in test scores in recent years. Also, the rise of 0.4 year in mean education across cohorts from 1966 to 1970 is higher than the increase of 0.1 year in

median years of education documented by the Census Bureau for men 18–24 over the same time span (U.S. Department of Labor, 1979, p. 308).

Whatever their origin, however, these apparent differences among birth cohorts in the sample do slightly distort our results. We estimate that distortion is small and does not alter the major patterns we observe in differentiation and distribution. The possible distortion in the results will be discussed where appropriate.

The Parnes data are not strictly representative because some groups (primarily blacks) were sampled at a higher rate to obtain sufficient cases for subgroup analyses. Sampling weights were not used in this paper because earlier work (L. Gottfredson, 1980a) showed they made almost no difference if blacks and whites were analyzed separately.

Finally, important variables and populations were not examined in this paper. For example, vocational values and interests could be more extensively measured than we have done. In addition, we did not examine women and parallel analyses for blacks were not possible, primarily because of the large cohort differences among black men in the sample (L. Gottfredson, 1980a). Despite the foregoing limitations of focus, our analyses provide an illustration of the usefulness of examining the evolution of populations during a critical period of career development.

RESULTS

Differentiation in Employment and Education

Table 1 provides a description of the labor force status and employment of the young men according to type and level of work. This table shows how the distribution of white men by labor force status changes from age 16 to 28. About half the men were employed at age 16, an age at which most could still be expected to be attending high school. Looking at the last two columns, about 9% of the 16-year-olds were unemployed; about 41% were not in the labor force (that is, neither employed nor looking for work). By age 22 about 85% of the men were employed and another 11% were still not in the labor force; by age 28 almost all were working. Of course many of the younger men were still in school even though they may have been employed. Many of these men probably considered themselves as holding only temporary jobs until they could finish school and actually start their real careers. Therefore it is useful to know what proportion of the men considered their job their major activity. By age 18 two-thirds of the men who were employed reported that working was their major activity; by age 22, 90% of employed men reported this. (The percentages of employed men reporting work as their major activity were, respectively for the seven age groups, 11, 66, 76, 90, 96, 96, and 99.)

TABLE 1
Percentage of Men Employed (In Each of Eight Occupational Groups), Unemployed, or Not in the Labor Force

Age	Occupational group in which employed								Unemployed	Not in labor force	N
	R Lo	R Mod	C Mod	E Mod	E Hi	I Hi	S Hi	Other			
16	38.9	1.7	1.2	3.8	0.3	0.0	0.0	3.2	8.9	41.5	884
18	40.9	6.1	3.3	4.8	1.4	0.9	0.5	4.5	7.8	29.9	1480
20	37.7	9.3	5.0	6.4	4.2	2.6	1.0	5.6	5.3	22.9	1417
22	36.2	12.1	5.5	6.4	7.0	4.7	5.3	7.5	4.5	10.9	1170
24	34.3	11.5	4.3	8.0	12.4	7.6	5.8	8.2	1.9	6.1	1100
26	32.8	14.0	3.6	7.3	13.4	7.9	5.7	10.3	1.4	3.4	923
28	31.1	12.8	3.7	7.3	17.1	8.5	6.2	8.9	2.1	2.1	483

Table 1 also reveals what types and levels of work were held by white men of different ages. Most of the men were employed in only 7 of the 18 possible groups, as is true of adults in general (L. Gottfredson, 1980b). This primarily reflects the fact that level and field of work are not independent empirically. The youngest men were employed almost exclusively in low-level realistic work. As the men aged and as more entered the labor market, employment in this type of work decreased and the men moved into an increasingly broad spectrum of work. Employment in moderate-level jobs increased until age 22, at which age it leveled off to about 24% of these men. Between ages 20 and 24—ages during which many men are leaving college—there were large proportional increases in employment in high-level jobs. The major net movement of men after age 24 appears to be into high-level enterprising work, which provided over half the high-level employment by age 28. This major net movement into enterprising work was noted in previous work (L. Gottfredson, 1979), but it was not determined in that paper whether the increase was in high-level versus moderate- or low-level enterprising work.

Table 1 illustrated several ways in which men are differentiated in their early career development: they enter the labor force at different ages, and they are eventually distributed into varying types and levels of work. Table 2 reveals other aspects of differentiation with age. The upper panel of this table presents the means and standard deviations for several key characteristics: respondent's occupational status, years of education, and IQ as well as father's status and education. This table includes all men for whom labor force status is known and therefore includes men who are not employed as well as men who are. Respondent's occupational status refers to the current or last job and so excludes the few men who report never having had a job. (No data were imputed for missing values in this analysis.) The means and standard deviations in Table 2 show that the men continued to become more differentiated by education until age 22. Although mean occupational status increased until age 28, variation in status may have stabilized for these men around ages 24 to 26.

These estimates of the ages at which differentiation levels off may be slightly in error because, as discussed earlier, the difference in mean years of education between the youngest and oldest cohorts may be up to 0.3 of a year greater than is actually the case in the general population. The decreasing means in IQ, father's education, and father's occupational status among successively older men (shown in Table 2) are probably sampling artifacts as was argued earlier. Because these cohort differences work in the opposite direction than do developmental differences in these age groups, they underestimate somewhat the differences in attainment between younger and older men.

TABLE 2

Means, Standard Deviations, and Correlations for Socioeconomic Background and Occupational Status[a]: By Age

Means and standard deviations

Age	Respondent's status[b]			Respondent's years of education			Respondent's IQ[c]			Father's status[d]			Father's years of education		
	X̄	SD	N	X̄	SD	N	X̄	SD	N	X̄	SD	N	X̄	SD	N
18	23.9	17.1	1424	11.8	1.4	1480	5.8	1.7	1027	38.3	24.3	1385	10.9	3.5	1323
20	30.3	20.5	1386	12.7	2.0	1414	5.8	1.7	1156	39.1	24.4	1320	10.8	3.4	1241
22	36.6	23.2	1154	12.9	2.5	1167	5.5	1.8	939	38.1	24.1	1087	10.5	3.5	968
24	42.4	24.9	1088	12.8	2.8	1098	5.4	1.7	846	37.0	24.0	1033	10.1	3.6	872
26	43.7	24.7	918	12.8	2.9	922	5.3	1.6	689	36.4	23.9	870	9.9	3.6	703
28	45.4	25.4	480	12.9	2.9	483	5.2	1.7	368	35.5	23.8	460	9.8	3.6	364

Correlations of respondent's occupational status[b] with:

Age	Respondent's IQ		Respondent's years of education		Father's Status[d]		Father's years of education	
	r	N	r	N	r	N	r	N
18	.14	992	.17	1424	.13	1334	.15	1272
20	.13	1133	.20	1385	.16	1291	.13	1212
22	.32	930	.45	1153	.24	1073	.21	957
24	.38	838	.60	1087	.32	1021	.35	865
26	.43	689	.64	917	.31	865	.35	698
28	.45	368	.65	480	.41	457	.36	361

[a] Table includes only men for whom labor force status (i.e., employed, unemployed, or not in the labor force) is known.
[b] Occupational status (Duncan SEI score) is for current job if employed and is for last job if not currently employed.
[c] Stanine scores.
[d] Duncan SEI scores.

family background. The following discriminant analyses expand the examination of distribution processes to include type as well as level of work, to include more background variables, and to look at these variables simultaneously.

Discriminant analyses were performed for each age group in order to find the major dimensions along which young men employed in different types and levels of work differ. (Men who are unemployed or are not in the labor force and men who are in "other" occupations are not included in the discriminant analyses.) In particular, these analyses indicate which characteristics—respondent's education, parent's occupational status, and so on—are most useful in distinguishing workers in one occupational group from those in another, and they thus provide evidence about what it is that determines how men are sorted, or sort themselves, into different jobs. The results for Model 1, the model using traditional status attainment predictors, are discussed first.

Before discussing what discriminates among men in the different occupational groups, however, we examine questions about the overall usefulness of the discriminant analyses: (a) just how different are workers across the occupational groups compared to differences within groups, (b) how many dimensions (functions) are needed to summarize most of the differences between the groups, and (c) how well does the whole set of predictors predict occupational group membership? Table 4 presents the relevant results for Model 1. The upper panel shows what proportion of the total variance in each particular predictor is between groups. These proportions indicate that less than 7% of the variance in any of the characteristics is between groups for the younger men, but that most proportions increase in the mid-twenties—somewhat for parental characteristics (to about 14%), more for IQ and high school curriculum (to about 23%), and most for years of education (to 46%). Whereas the young men in the different occupational groups are not very distinguishable according to any of these criteria, the groups among the older men are more distinguishable—particularly in years of education. It should be remembered, however, that a much smaller proportion of the younger men than of the older men (e.g., 58% of the 18-year-olds versus 87% of the 28-year-olds) is included in these analyses because only employed men are analyzed. In addition, the between-group variance is restricted in the youngest groups because those men are found primarily in only one of the seven occupational groups analyzed.

The lower panel of Table 4 shows the eigenvalues and the canonical correlations of the first three (of the possible six) discriminant functions. The first three functions are significant for most of the age groups, but the first function summarizes most of the intergroup differences, particularly for the three oldest groups of men. The eigenvalues and canonical correlations for the second and third functions are quite small even

TABLE 4

Summary Statistics from the Discriminant Analyses of the Seven Major Occupational Groups Using Model 1: By Age

Age	Percentage of total variance which is between groups							
	Father's status	Father's education	Mother's education	IQ	Years education	College curriculum	Enrolled now	Any training
18	4	3	1	5	2	5	7	7
20	5	4	3	5	11	6	9	5
22	6	5	5	17	29	15	7	7
24	14	15	12	20	40	22	10	8
26	12	15	14	25	43	27	10	8
28	18	13	10	23	46	22	8	6

Age	Eigenvalues of first three functions			Canonical correlations of functions with occup. groups			Cases correctly classified	
	1st	2nd	3rd	1st	2nd	3rd	%	Kappa
18	.14**	.08**	.05**	.35	.28	.21	70	.05
20	.18**	.07**	.03	.39	.25	.17	50	.05
22	.52**	.08**	.04**	.59	.27	.21	51	.25
24	.88**	.09**	.05**	.68	.29	.22	51	.29
26	1.08**	.05**	.04**	.72	.23	.19	50	.29
28	1.11**	.07*	.03	.73	.26	.18	48	.29

* $p \leq .01$.
** $p \leq .001$.

though they are generally statistically significant. The last two columns in the lower panel of Table 4 indicate the ability of the eight predictors to predict group membership. Although the greatest percentage (70%) of cases was correctly classified in the youngest age group, most of these men are employed in only a single occupational group (see Table 1) and the kappa (.05) indicates that this percentage is what would be expected by chance. In contrast, about .3 of the agreement possible *above* that expected by chance is found for the three oldest age groups.

Turning to the more detailed results, Table 5 provides the coefficients for the first discriminant function and the centroids for each occupational group along this dimension. The first function is the one linear combination of the variables which best differentiates the occupational groups. Beginning with age 20, the first function appears to tap primarily an academic achievement dimension, although as Table 4 shows, even the first function is not very useful until age 22. Looking at the upper panel of the table, years of education has the largest weights in this first function, followed by IQ and having been in a college curriculum track

in high school. Parental background variables have essentially zero coefficients and so make almost no independent contribution to the first (and most powerful) function separating the seven groups. Current enrollment in school and a history of some vocational training have moderate weights on the first function among the youngest men, but this function is not useful at these ages and the two variables become relatively unimportant with age for defining the first dimension. The canonical correlation of scores on this first function with group membership—one measure of the ability of this dimension to distinguish among the groups—increases with age. This increase (shown in Table 4) is concurrent with the increasing differentiation among men in years of education completed (Table 2) and the more even distribution of men across the seven occupational groups (Table 1) that occur with age.

The lower panel of Table 5 shows the group means or centroids on the first discriminant function. With the exception of one occupational group in each of the two youngest age groups, the ordering of the seven occupational groups is exactly the same at all ages. As would be expected, the high-level occupational groups all score higher than the moderate-level groups, which in turn all score higher than the one low-level group. However, this function also discriminates among groups at the *same* level. The mean scores of the social and investigative groups are about the same on this achievement dimension but are considerably higher than the mean of the high-level enterprising group. In fact, the high-level enterprising group is closer on this dimension to the moderate-level groups. The moderate-level groups also vary along this dimension, although not to the same degree as the high-level groups. The moderate enterprising group scores higher than does the realistic group, and the conventional group scores higher than both of these.

The second and third dimensions (statistically independent of each other and of the first dimension) were also somewhat useful in distinguishing the groups, as noted above, but the coefficients did not reveal a clear pattern and so were not interpretable. The second function was not the same across all age groups, nor was the third. Plots of the centroids of the occupational groups along the second and third dimensions (not shown here) did, however, show consistent differentiation among groups at the same level, that is, among the three high-level groups and also among the three moderate-level groups. We stress again, though, that the first function was by far more useful and interpretable than the others.

The second and third dimensions separated the types of work rather than the status levels of work. In contrast, the first function appeared to separate the groups primarily by status and only secondarily by type of work. We interpret this observation as follows. First, the discriminatory variables were selected on the basis of previous research which

TABLE 5
Standardized Coefficients and Centroids for the First Discriminant Function Using Model 1: By Age

Standardized coefficients of first discriminant function

Age	Father's status	Father's education	Mother's education	IQ	Years education	College curriculum	Enrolled now	Any training	N
18	.08	.30	-.24	.35	.14	.27	.34	.40	859
20	.23	-.07	.09	.19	.48	.21	.18	.23	937
22	.08	-.08	-.06	.31	.70	.16	.03	.18	902
24	.08	-.00	-.02	.22	.65	.21	.05	.17	923
26	-.03	.02	.08	.25	.58	.25	.07	.15	783
28	.12	.02	-.05	.18	.67	.16	.16	.11	419

Centroids on first discriminant function

Age	R Lo	E Mod	R Mod	C Mod	E Hi	I Hi	S Hi
18	-.18	.49	.15	.70	-.09	.88	2.06
20	-.25	.38	-.14	.72	.33	.95	1.07
22	-.45	-.01	-.16	.38	.44	1.22	1.35
24	-.60	-.07	-.32	.11	.67	1.18	1.27
26	-.65	-.19	-.30	.10	.65	1.30	1.30
28	-.65	-.38	-.38	.14	.54	1.25	1.33

had found them useful for predicting occupational *status* (that is, in explaining distribution along a status hierarchy), so it is not surprising that the first and by far most powerful function was primarily a status dimension. Second, the first three functions nevertheless *did* help to discriminate among different types of work, although most of the sociological work to date would not have predicted that result. To some extent the distribution of men to different types of work is associated with educational experiences and ability even when their occupational status is held constant. And third, we would expect discriminant analyses to be more useful in distinguishing among the types of work were we to include variables theoretically expected to influence distribution to types of work, for example, aspirations for type of work or father's field of work. The following analyses test some of these speculations.

Comparing Different Models of Occupational Membership

Models 2 through 5 successively add more variables to the basic model of what determines occupational group membership. Models 2, 3, and 5 add variables that should be related more to field than to level of work. The five models are compared using a smaller set of men than was used in the earlier detailed analysis of Model 1. The number of cases in these latter analyses is smaller because all men for whom job value and occupational aspirations are not known were excluded. Model 1 looks essentially the same whether the smaller or the larger set of cases is used.

Table 6 summarizes comparisons among the five models. This table shows the percentage of cases classified into the correct occupational group using the discriminant functions derived for each model to predict group membership and the kappas for those predictions. Looking first at Models 1, 2, and 3, we see that for all age groups the percentages and the kappas are the same for the three models, indicating that the latter two models are no better than Model 1 for predicting occupational group membership. Both the slight increases and decreases in percentage of cases correctly classified are within twice the standard error of kappa. This means that knowing father's field of work and whether men prefer well-paying jobs to ones they "like" does not help us better predict what type of work they are in—once we already know their socioeconomic background, IQ, years of education, and whether or not they had some training. Stated another way, the field-related predictors in Models 2 and 3 added nothing to the level-related predictors in accounting for status–field group of employment. This is not to say that other field-related variables would not be useful. For example, the variable "job value" may be only a poor indicator of field-related values and interests which could conceivably affect later employment, especially because it was measured only in 1966.

TABLE 6

Percentage of Cases Correctly Classified and Kappas for Five Models Predicting Occupational Group Membership: By Age

							Age												
	18			20			22			24			26			28		
Model[a]	%	Kappa	SE[b]	%	Kappa	SE	%	Kappa	SE	%	Kappa	SE	%	Kappa	SE	%	Kappa	SE
1	72	.02	.01	55	.07	.02	52	.30	.02	50	.30	.02	46	.28	.02	49	.33	.03
2	72	.03	.01	56	.11	.02	52	.32	.02	51	.32	.02	47	.29	.02	51	.35	.03
3	72	.03	.01	56	.12	.02	53	.32	.02	51	.32	.02	48	.31	.02	51	.35	.03
4	73	.04	.01	56	.15	.02	52	.30	.02	52	.34	.02	50	.34	.02	52	.39	.03
5	72	.10	.02	55	.17	.02	52	.34	.02	55	.41	.02	58	.47	.02	64	.55	.03
N	615			679			653			710			598			356		

[a] The variables included in each model are described in the text and are shown in Table 8. Each of the five models results in six discriminant functions.

[b] SE = standard error of kappa.

Models 4 and 5 add aspirations in the previous year, Model 4 adding status aspirations and Model 5 adding both status and field aspirations to Model 3. The percentages and kappas in Table 6 show that only Model 5 clearly increases the proportion of cases correctly classified, and the increases occur only among the older men. For example, among 26-year-olds, the kappas for Models 3, 4, and 5 are respectively .31, .34, and .47. For 28-year-olds, they are .35, .39, and .55. This means that if we know what level of work a man wants, we are better able to predict what work he will be doing the next year—although the increase in predictability is not great. Knowing field aspirations produces a greater increase in predictability than does knowing status aspirations.

One question raised earlier was whether more than one dimension of background characteristics is useful in predicting occupational group membership. There is clearly an educational achievement dimension (including IQ and education) that accounts for level and to some extent field of work entered. But are there also other dimensions which might account primarily for why men enter one field rather than another? Table 7 provides evidence on this issue. This table shows the eigenvalues and the percentage of discriminating variance accounted for by each of the first three discriminant functions in each of the five models. As noted earlier, Model 1 produces only one important function. Models 2 and 3 exhibit the same pattern as does Model 1; eigenvalues and percentages of variance are almost identical in these three models for the first three functions. Model 4—which adds status aspirations—increases the power of the first function (among the oldest men) but does not affect the usefulness of the second and third functions. Adding aspirations for field of work (Model 5) changes the pattern. The four dummy variables for field of work added in Model 5 further increase the power of the first function—particularly among the oldest men. But these variables also increase the power of the second and third functions among the older men. Among the 28-year-olds, the second function has an eigenvalue of 1.15, accounting for 25% of the predictable between-group variance; the value is .60 for the third function, accounting for 13% of the predictable between-group variance.

The remaining tables show the composition of the functions and along what dimensions they distinguish men in the different fields and levels of work. The first function is the most important, so it will be discussed in detail first. Table 8 shows the standardized discriminant coefficients for the first function for each of the five models. It reveals several interesting points. Table 6 showed that father's field of work and job value did not add to the predictability of occupational group, but it is possible that they nevertheless mediate or (in the case of father's work) are mediated by the other variables. For example, father's field of work might affect one's education which in turn affects kind of work obtained.

TABLE 7

The Usefulness of the First Three Discriminant Functions from Five Models of Occupational Group Membership: Eigenvalues and Percentage of Discriminable Variance Accounted for among White Men of Different Ages

Discriminant analysis model	Age											
	18		20		22		24		26		28	
	EV[a]	%[b]	EV	%	EV	%	EV	%	EV	%	EV	%
First discriminant function[c]												
1	.14	50	.20	61	.60	73	.89	83	1.07	88	1.19	86
2	.14	50	.21	56	.60	72	.90	79	1.09	82	1.20	82
3	.14	46	.21	56	.60	72	.90	78	1.09	82	1.20	81
4	.15	47	.27	59	.62	71	1.01	78	1.24	82	1.54	80
5	.17	45	.28	47	.71	52	1.10	54	1.40	53	2.37	52
Second discriminant function[d]												
1	.09	32	.07	21	.12	15	.10	9	.06	5	.09	6
2	.09	32	.07	19	.12	15	.10	9	.11	9	.11	7
3	.10	34	.07	19	.12	15	.10	9	.11	8	.12	8
4	.10	33	.08	17	.12	14	.11	9	.11	8	.17	9
5	.11	28	.11	18	.29	21	.42	21	.52	20	1.15	25
Third discriminant function[e]												
1	.03	12	.04	11	.05	6	.06	5	.05	4	.05	4
2	.04	12	.04	11	.05	6	.08	7	.07	5	.06	4
3	.04	12	.04	11	.05	6	.08	7	.07	6	.07	5
4	.04	12	.05	10	.05	6	.08	6	.08	5	.08	4
5	.06	15	.08	14	.21	15	.27	14	.45	17	.60	13

[a] Eigenvalue of the function in question.
[b] Percentage of discriminating variance accounted for by the function in question.
[c] $p \leq .01$ for all models and ages.
[d] $p \leq .01$ for all models and ages.
[e] $p \leq .01$ except for age 18 (Models 1–5), age 20 (Models 1–4), and age 28 (Models 1–4).

TABLE 8

Standardized Discriminant Coefficients for the First Function of Five Different Models of Occupational Group Membership: By Age

Predictor	Age 18					Age 20					Age 22				
Model:	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Father's status	.00	-.02	-.02	-.05	-.07	.20	-.07	-.07	-.06	-.06	.09	.18	.19	.18	.09
Father's educ.	.33	.31	.31	.30	.35	-.01	-.05	-.05	-.08	-.09	-.07	-.07	-.07	-.08	-.04
Mother's educ.	-.31	-.34	-.34	-.34	-.33	.13	.12	.12	.10	.11	-.16	-.16	-.16	-.17	-.17
IQ	.40	.38	.38	.34	.31	.23	.23	.24	.16	.19	.35	.34	.34	.33	.33
Years educ.	.18	.19	.19	.11	.11	.48	.47	.48	.31	.31	.77	.77	.77	.71	.61
HS curriculum	.20	.21	.21	.14	.14	.15	.14	.14	.03	.05	.14	.14	.14	.13	.07
Enrolled now	.50	.52	.52	.50	.42	.25	.24	.24	.08	.02	-.01	-.01	-.01	-.04	-.08
Any training	.24	.19	.19	.17	.20	.13	.13	.13	.16	.15	.22	.22	.22	.20	.13
Father's field: I		.15	.15	.15	.12		.31	.31	.29	.27		-.05	-.05	-.04	-.02
Father's field: S		-.03	-.03	-.04	.00		.03	.03	.03	.02		.02	.02	.01	.03
Father's field: E		.01	.01	.01	.00		.21	.21	.17	.16		-.12	-.12	-.13	-.07
Father's field: C		-.02	-.02	-.03	-.01		.24	.24	.20	.20		-.03	-.03	-.03	-.02
Job value			.00	.00	-.02			.03	.01	.01			.03	.03	.00
Aspirations: Status				.30	.38				.56	.42				.19	.10
Aspirations: I					-.15					.08					.04
Aspirations: S					-.18					.15					.46
Aspirations: E					-.17					.23					.10
Aspirations: C					.30					.11					.00

Predictor	Age 24					Age 26					Age 28				
Model:	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Father's status	.04	-.02	-.01	-.05	-.03	-.09	-.05	-.06	-.05	.01	.11	.15	.15	.11	.08
Father's educ.	.03	.02	.03	.04	.02	-.02	-.03	-.03	-.03	-.06	-.05	-.04	-.04	-.10	-.19
Mother's educ.	-.05	-.05	-.06	-.08	-.07	.15	.15	.15	.15	.15	-.04	-.04	-.04	.00	.02
IQ	.25	.26	.26	.21	.22	.33	.34	.34	.28	.23	.22	.22	.22	.17	.02
Years educ.	.73	.73	.73	.59	.56	.64	.63	.63	.51	.44	.73	.73	.73	.53	.40
HS curriculum	.20	.20	.20	.17	.16	.28	.27	.27	.21	.20	.22	.22	.22	.16	.08
Enrolled now	.07	.06	.07	.01	.00	.04	.03	.03	.00	.01	.24	.24	.24	.15	.01
Any training	.23	.23	.23	.20	.18	.23	.23	.23	.19	.16	.18	.19	.19	.17	.16
Father's field: I		.07	.07	.08	.06		.09	.09	.07	.04		-.08	-.08	-.06	-.05
Father's field: S		.02	.02	.01	.00		-.08	-.08	-.09	-.07		-.06	-.06	-.02	-.01
Father's field: E		.05	.06	.07	.05		-.06	-.05	-.09	-.14		-.02	-.02	-.03	-.04
Father's field: C		.02	.02	.01	.00		-.04	-.04	-.05	-.05		-.02	-.02	-.01	.01
Job value			-.04	-.03	-.02			-.04	-.06	-.05			.00	.02	-.04
Aspirations: Status				.37	.10				.39	.18				.52	.11
Aspirations: I					.33					.33					.17
Aspirations: S					.33					.40					.84
Aspirations: E					.28					.06					.22
Aspirations: C					.15					.12					.02

However, if we look at the coefficients for Models 1, 2, and 3 in Table 8, we see that the introduction of father's field and job value in the models does not alter the coefficients of the other variables at all. These coefficients would be changed with the introduction of the new variables if they shared variance in common. Turning to Model 4, we find (not surprisingly) that status aspirations share variance in common with other predictors; the most powerful variables in the first function—IQ, education, curriculum, enrollment, and training—all decrease with the addition of status aspirations. The coefficients for Model 5 indicate that aspirations for field of work further decrease the coefficients for these variables, indicating that field aspirations also share variance in common with the more clearly status-related predictors. The coefficients for field aspirations indicate that it is aspirations for social jobs (and at some ages investigative jobs as well) rather than other fields of work that are highest on this first dimension, net of the other background variables.

Table 9 shows the standardized discriminant coefficients for the second and third functions for Model 5, together with the centroids of the seven occupational groups along those dimensions. The results are shown only for men 22 and older because (as Table 7 shows) the second and third functions are not useful among the younger men. As the centroids show quite clearly, these two functions serve primarily to separate the three high-level groups of work: the second function contrasts I-high with S-high; the third function contrasts E-high with I-high. The two functions are also somewhat useful in distinguishing among the moderate-level groups. The second function separates C-moderate from R-moderate; the third function separates E-moderate from R-moderate. The coefficients in the lower half of Table 9 show that it is primarily the field aspirations that contribute to these functions—which is not surprising because these functions did not become useful until these variables were added to the model. As will be discussed below, the interpretation of these two functions is not clear because the field aspirations may reflect little more than the accuracy with which men may be able to predict where (the fields in which) they will be working the following year.

DISCUSSION

Three major questions were examined in this study. In what *fields and levels* of work are men employed at different ages? How *differentiated* (heterogeneous) are men at different ages in job-relevant characteristics such as education? And what personal and family characteristics are most important in explaining how men are *distributed* (or distribute themselves) to different jobs? For example, do men's jobs become more strongly or less strongly linked to their socioeconomic background as they grow older? And by what ages have differentiation and distribution been largely completed?

TABLE 9
Centroids and Discriminant Coefficients for the Second and Third Functions of Model 5: By Age

Age:	Second function				Third function			
	22	24	26	28	22	24	26	28
Centroids								
Group								
R Lo	−.23	−.20	−.29	−.74	−.08	−.05	−.17	−.42
R Mod	−.03	−.08	−.16	−.23	−.37	−.40	−.39	−.21
E Mod	.06	.33	.52	−.09	1.02	.60	.65	.80
C Mod	.83	.77	.02	.38	−.02	.13	−.22	.42
E Hi	.49	.74	.79	.83	.84	.65	.97	1.22
I Hi	1.19	.48	.83	2.45	−.71	−1.18	−1.37	−1.35
S Hi	−1.03	−1.81	−1.98	−1.63	−.07	.35	.58	−.13
Standardized discriminant coefficients								
Predictor								
Father's status	.49	.06	.08	.20	.27	−.35	−.28	.03
Father's educ.	−.01	.19	.12	.04	−.08	−.20	.08	.07
Mother's educ.	.01	−.05	−.03	−.08	.12	.15	.08	.16
IQ	−.01	.01	.16	.20	−.03	−.02	−.12	−.07
Years educ.	.01	−.13	.01	.18	.10	.04	.16	.09
HS curriculum	.26	.01	−.03	.10	.03	.16	.11	−.17
Enrolled now	.22	−.07	.05	.28	−.21	−.29	−.11	−.15
Any training	.42	−.02	.01	.09	−.30	−.04	.02	−.03
Father's field: I	−.15	.27	.20	.03	−.11	.12	−.22	−.01
Father's field: S	−.20	−.04	−.11	.05	−.13	.08	−.03	.07
Father's field: E	−.25	.11	.06	−.07	−.08	.30	.22	−.03
Father's field: C	−.04	.06	−.02	−.06	.06	.19	.05	.10
Job value	.14	.03	−.02	.05	.07	.11	−.01	.07
Aspiration:								
Status	−.32	−.09	.15	.19	−.33	−.22	−.24	.18
Aspiration: I	.58	.29	.07	.51	−.04	−.32	−.35	−.40
Aspiration: S	−.38	−.53	−.73	−.50	.30	.44	.38	.04
Aspiration: E	.40	.61	.37	.17	1.02	.71	.83	.78
Aspiration: C	.26	.30	−.01	.06	.15	.19	.22	.33

This study of career development differs from most others in several respects. First, it produces a profile of how a *population* changes with age. In contrast, almost all career development research focuses on career patterns among individuals. Both perspectives—of the population and of the individual—are important, however, for understanding careers and the potential role of counselors in furthering career development among their clients. The constructs of differentiation (heterogeneity) and distribution (the sorting of people to jobs) were defined and used to describe the dynamics of career development between 1966 and 1971 in a population of young white men.

Second, this study differs from most others by classifying jobs by both field (Holland type) and level (status) of work. Vocational research tends to concentrate on field of work, though previous theorists in the field (e.g., Roe, 1956) as well as research in other disciplines such as sociology have documented the importance of occupational status for both career aspirations and career outcomes such as pay, satisfaction, and other measures of well-being. Our previous research has suggested that this multidimensional view of jobs is more useful than characterizing jobs by either level alone or field alone, and the results of the present study provide additional evidence supporting the value of such a multidimensional view.

The data used in the study have several advantages: the sample is large ($N = 3730$); occupational and educational development were followed over the critical first decade after high school; and measures of some important job-relevant attributes such as IQ were available for most of the men in the sample. These advantages made it possible to estimate multivariate models at successive ages to determine the particular personal characteristics most important in sorting men (or men sorting themselves) to different jobs.

The major limitations of the analyses were discussed earlier: only civilian white males are included; age, cohort, and period effects are not disentangled; values were imputed for missing data in some analyses; and there are differences among the birth cohorts which may slightly distort the results.

Nevertheless, the results provide a glimpse of the process by which people become sorted to jobs during the critical first decade after high school. This study essentially provides a series of snapshots at regular intervals of the results of the ongoing process which distributes men to jobs. More detailed examinations should be made, but these preliminary snapshots do provide an outline of the process which is consistent with the major conclusions from previous research on intergenerational status mobility but which goes beyond that research by examining the systematic variations in how people attain jobs in different *fields* of work.

The following pages review the major results of the study and explore some of their implications for vocational research and theory. Counseling implications have been discussed elsewhere (L. Gottfredson, 1981; L. Gottfredson & Becker, 1981).

Attachment to the Labor Force

The proportion of young white men who are employed rises from 50% at age 16 to 72% at age 20, but many of these employed men did *not* consider working to be their major activity. From 89% of employed 16-year-olds to 24% of employed 20-year-olds did not consider working their major activity. By age 24, however, 92% of men were employed and

almost all of them (96%) considered their job to be their major activity. These results suggest that integration into the labor force begins before high school graduation for over half of men, but that perhaps their attachment to their work does not become strong until several years later.

The youngest men who are least attached to the labor force are in large part probably engaged in "kid work" or temporary jobs until they get a "real" job after leaving school. The results showed that most adolescent men are employed in only one kind of work—low-level realistic work (such as manual labor)—and that men tend to move out of this work with age. It is not surprising, then, that we were unable to predict beyond the chance level what type of work adolescents hold by examining their personal and family characteristics. And as will be discussed further below, adolescent men were not yet differentiated according to their most important job-relevant characteristic—educational level.

Differentiation in Job-Relevant Attributes

We examined heterogeneity in several job-relevant characteristics, but focused primarily on educational attainment because it both changes with age and is quite important in predicting occupational outcomes. Some characteristics—IQ and parents' education and occupation—were measured only once but would not be expected to change much, if at all, during the men's adolescence and early working years. The differences across the age groups in these characteristics, shown in Table 2, are due to either sampling or cohort differences as explained earlier and do *not* reflect changes which occurred in the men's lives over the study period.

Mean educational levels rise most quickly at the earliest ages and gradually level off in the mid-twenties as the last men leave college (Table 2). This rise in mean education is accompanied by increased heterogeneity (i.e., higher standard deviations) in years of education completed. Although mean education rises by only 1 year from ages 18 to 28 (from 11.8 to 12.9 years), the standard deviations increase by 1.5 years (from 1.4 to 2.9 years, respectively). Standard deviations level off around age 24, indicating educational differentiation has largely run its course by the mid-twenties for these men.

Educational levels have been steadily rising over time in the United States, so we might expect the foregoing picture to be somewhat different now or to change in the future. If the proportion of men who go to college or graduate school continues to rise, both the process of educational differentiation and that of attachment to the labor force will not level off till later in the twenties. The increased drive in the last decade to enroll more adults in college may also be prolonging differentiation at a low rate into midlife. The level of work one can obtain with a given level of education might simultaneously be dropping over time even

though people are better educated because the sorts of jobs available in our economy probably change more slowly. These examples illustrate why one must be mindful of cohort differences in one's own sample or across samples when evaluating the relation of education to career development.

Differentiation in Kinds of Work Held

This study examined employment in three status levels of the six Holland fields of work. As with adults in general, the young men in the sample were employed primarily in only 7 of the possible 18 occupational groups: low-level realistic work, moderate-level realistic, enterprising, and conventional work, and high-level enterprising, investigative, and social work. The Holland fields of work differ considerably in the levels of work they offer workers. Realistic work is primarily low level; conventional is primarily moderate level, and investigative and social are primarily high level. The most common types of jobs among men—realistic and enterprising—do span two levels in significant numbers, however.

Men become increasingly heterogeneous with age in the kinds of work they hold. Most of the youngest employed men hold low-level realistic work (Table 1). With age, smaller and smaller proportions of men are employed in low-level realistic work, indicating that many men actually move out of it with age. With increasing age, the sorts of men who are employed in this easy-entry, low-level work probably become more homogeneous because the percentage of men in this work with IQ scores in the upper 40% of the IQ distribution drops from 43 to 24% (Table 3). This trend of a smaller proportion of higher-IQ men among older workers is also found in the three other types of work that are held in any number by adolescent men—moderate-level realistic, conventional, and enterprising work. In these cases, however, it is not possible with the results shown to tell whether this change is primarily because high-IQ men are leaving these jobs, primarily because low-IQ men are entering them, or both.

By age 18 substantial numbers of men (14% of all men and 23% of employed men) are employed in the three moderate-level groups of jobs, but as yet only a small proportion (3% of all men and 4% of employed men) are in high-level jobs. Over two-thirds of employed 18-year-olds are still in low-level work. By age 22, presumably when large numbers of men have received a bachelor's degree, men hold a much more heterogeneous mix of jobs. It is at this age that substantial numbers of men become employed in high-level work—high-level enterprising, investigative, and social work. Between ages 22 and 28 the major net changes in employment are a continued decrease in the percentage of men in low-level realistic work and an increase in high-level enterprising work.

By age 28 at least 44% of men are employed in realistic work (most of it low level), 24% in enterprising work (most of it high level), and 15% in the two other major types of high-level work (social and investigative).

The foregoing analyses showed occupational differentiation among currently employed men. It is also useful to look at occupational differentiation among men's current *or* last jobs if not currently employed, because many men have job experience even though they may not be currently employed. For example, over 90% of 18-year-olds reported having had a job but only two-thirds of this age group was currently employed. Looking at differentiation in occupational status (ignoring field of work for the moment) also enables us more directly to compare differentiation in jobs to the differentiation in education summarized earlier.

The biggest average increases with age in occupational status of current or last job (Table 2) occur before age 24, the age period in which the rate of educational differentiation is also greatest and in which employment rates are increasing most rapidly. On a scale from 0 to 96, 18-year-olds have a mean occupational status level of 24, whereas 24-year-olds have a mean score of 42. As suggested earlier, this rise in mean status levels of current or last job probably occurs both because men in low-level jobs are working their way up in status and because many men are moving directly from "kid work" to the high-level work for which they were educated. The standard deviations are commensurate with this trend: most adolescents share the same low-status work experience but they become increasingly heterogeneous in job levels until at least age 24. The standard deviations rise from 17 to 25 between these same age groups. Mean status levels continue to rise in the late twenties, but the standard deviations do not. This suggests that most men are continuing to increase in status by a small amount, but that the process which differentiates them from each other has largely been completed. Because of the possible sampling artifacts described earlier, the process may actually last a somewhat longer or shorter time than documented here. And if *educational* levels are still rising among more recent birth cohorts, we would expect a more protracted process of status differentiation today than in this decade-old sample because employment would be delayed until older ages on the average.

Distribution into Jobs According to Background Characteristics

A simple correlational analysis showed that the links between men's employment and their social background and job-relevant attributes become much clearer with age. When men are young they are fairly homogeneous in both educational and occupational attainment so the correlations of their occupational status with their education and IQ and with their fathers' education and occupational status are very low (Table 2). However, the correlations of current or last job status with these

other characteristics increase dramatically from age 18 to 28—from .17 to .65 for education and from about .14 to .45, .41, and .36, respectively, for IQ, fathers' status, and fathers' education. Because men have become increasingly differentiated with age in education—and as a result in status as well—the link between the two becomes clearer with age. With age a link also appears between the men's and their fathers' occupational statuses but it is a weaker one.

The comparability of the foregoing correlations among the older groups to those among the much older adults cited in the introduction suggests that the sorting process may be largely complete by the late twenties. Individual men will continue to change jobs and advance or fall in status, but the overall process of population differentiation and distribution may have largely run its course for these men. This conclusion is tentative because we have not examined men aged 30 or above. It is consistent, however, with other evidence that job changing decreases sharply with age (Byrne, 1975; Sekscenski, 1979).

More complex analyses—discriminant analyses—were conducted to further explore these links. Specifically, they were done to determine how various background characteristics distinguished among men in the seven major occupational groups and to gauge their relative importance in determining occupation held. Before summarizing those results, a short summary of how well occupation could be predicted will put those results in perspective. While the links are strong, they in no way completely explain occupational outcomes.

The ability to predict occupational membership increased with age, but not till age 22 were predictions much beyond the chance level. Depending on the number of variables which were used to predict occupational group, the kappas for the 28-year-olds (Tables 4 and 6) ranged from about .3 to over .5. (The hit rates ranged from 48 to 64% for these men.) In short, as men become more heterogeneous in occupational outcomes, and as more men become employed, occupational group can be better predicted (above the chance level) by family background and personal attributes. The youngest men are essentially in only one type of work, so predictions are not increased above the chance level by knowing anything about these men.

What is it about the men that helps us predict their occupational group membership? Several prediction models were used. The simplest model included variables traditional within sociological work—most importantly, respondent's IQ and years of education, father's occupational status, and both parents' education. (All the predictors in Model 1 are shown in Tables 5, 8, and 9.) Models 2 and 3 also included predictors which were thought to be related to Holland field of work—father's Holland field and the respondent's preference for high paying rather than

interesting work. Models 4 and 5 also included aspirations 1 year earlier: aspirations for occupational status (Model 4) and aspirations for both status and field of work (Model 5).

Models 2 and 3 neither increased predictions nor were the variables they added associated with the Model 1 variables which were predictive. This indicated that neither father's Holland field of work nor the respondent's preference for high-paying work is useful for predicting occupational group membership—contrary to what was predicted.

Knowing a man's occupational aspirations—particularly his aspirations for field of work—does improve the prediction of occupational group membership among the 26- and 28-year-olds. However, the ability of field aspirations (Model 5)—and possibly level aspirations (Model 4)—to better account for occupational group membership must be seen in the light of results presented elsewhere. Status aspirations are highly correlated with variables in Model 1 such as IQ, family background, and educational attainment, so we would not expect status aspirations to add much to our predictions once we know these other determinants of jobs and aspirations. This is not to say that status aspirations are not important, but only that any effect they have on actual occupational status is most likely through their effect on educational attainment. Status aspirations increase predictions slightly among older men (indicating some independent "effect"), but this could be explained in several ways: men have a good idea of what they will be doing the next year and their aspirations reflect this reality, status aspirations reflect the effects of other background variables not measured, and the aspirations actually affect what work will be obtained (e.g., by leading the man to search for that work) independently of men's other personal characteristics. There is no way here to choose among these explanations.

Aspirations for Holland field of work appeared to have a greater independent effect. But it is also true that men appear to come to want the field of work they are employed in because their aspirations change to match their jobs more often than vice versa (L. Gottfredson & Becker, 1981). Hence, the increase in predictability of group membership once we know men's field aspirations may reflect the men's knowledge of where they are likely to be working the next year and their acceptance of it. Had we used much earlier field aspirations it is unlikely that they would have added significantly to the prediction because there is a considerable shift in field aspirations from adolescence through the twenties so that as a group the men's aspirations come to mirror the types of jobs that men in general hold. Because men's field of work is quite stable from 1 year to the next in the late twenties, men are very likely to be where they "want" to be the next year. Thus, it is not clear that field aspirations reflect anything more than fairly accurate predictions of where

they will be in the following year. Such "knowledge," however, would function as a stabilizer in careers, keeping men from attempting to move in different directions.

The foregoing results suggest, then, that it is primarily the predictors in Model 1 that distinguish among men in the different fields and levels of work. Although it was possible to find two or more dimensions (discriminant functions) among the Model 1 predictors to be important in predicting occupational group, only one dimension was important in any of the age groups. Among the age groups (ages 22–28) for which predictions were clearly above chance (kappa of about .3 and above), the first discriminant function accounted for from 52 to 88% of the predictable between-group variance. That first dimension was an academic achievement dimension because years of education and, to a lesser extent, IQ and being enrolled in a college curriculum during high school were the variables with high weights on this function. This was true for all the age groups where this function significantly discriminated among the occupational groups. Father's occupation and parents' education made neither large nor consistent independent contributions to this function. These results are reasonably consistent with previous status attainment work which shows via path models that education is a more important determinant of occupational status than IQ which is in turn more important than family background (e.g., Sewell & Hauser, 1975).

It is particularly interesting to look at the average scores (the centroids) along this dimension of men in the seven different occupational groups. The groups were ranked along this dimension—at all ages—in the following order from low to high: low-level realistic, moderate-level realistic, enterprising, and conventional, and high-level enterprising, investigative, and social (Table 5). It is not surprising that all the moderate-level groups ranked higher than the low-level realistic group and lower than all the high-level groups on this academic achievement dimension because occupational status is highly correlated with educational attainment. What is more interesting is that the different Holland types at the *same* status level ranked differently. The most striking difference was that high-level enterprising work was more similar to the *moderate*-level groups than to the high-level social and investigative groups. This cannot be accounted for by mean status differences among the three high-level groups, because it was shown earlier that they are nearly identical. This unexpectedly low score of the enterprising group is consistent with earlier evidence (L. Gottfredson, 1978b) that enterprising work requires less education on the average to enter than do other types of high-level work. These results also reinforce the point that career development researchers should be mindful of differences in both educational and occupational *levels* when explaining entry into the different *fields* of work. Likewise, the results should remind researchers in the status attainment tradition

that both field and status are important aspects of occupation and that the importance of education may vary systematically according to the field of work considered.

Status versus Field in Career Development

The first discriminant function separated the seven occupational groups primarily according to their status level. The second and third dimensions separated the fields of work *within* each status level, but they were not very useful or interpretable. In addition, variables which were expected to help predict field of work did not do so. The occupational groups lay primarily along a status dimension and men were distributed to them primarily according to their academic attainment (years of education and IQ). While it is true that our analyses did not include very good measures of vocational interests and values that might be predictive of field of work, those influences would have to be quite powerful to rival the status dimension in importance.

What do these results imply for the relative importance of status level versus field in the determination of occupational outcomes? We have speculated elsewhere (L. Gottfredson & Becker, 1981) that occupational status may be of higher priority to men than the field of work they enter, and that many men will if necessary enter a field of their second or third choice in order to obtain a job within an "acceptable" status range (these acceptable ranges varying considerably according to one's social-class background and ability). We have also speculated that these status preferences are formed early in life and that educational plans are probably made accordingly. In today's world, if one does not finish high school, one is likely to end up in low-level work. And only with some college education is one likely to get high-level work. Men realize this and their educational plans reflect the general job level they are seeking or are willing to accept. In order to obtain an acceptable job level, men may be—may *have* to be—flexible about which field of work they pursue. For example, we would assume that when college students are faced with a choice between switching to a less preferred field (perhaps because of poor grades in their preferred field) versus pursuing their most preferred field at a lower level (e.g., becoming a mechanic or technician rather than an engineer), most students will switch to a different field at the same general level and sacrifice their earlier field preferences. The large number of students who shift from science to non-science majors during college is consistent with these speculations. So too are the findings that status aspirations are very stable on the average in different social groups from at least age 15 on, but field aspirations show larger net shifts as people move through college or into the labor market (L. Gottfredson & Becker, 1981). The large shifts in enrollments in education and engineering majors which have followed changes in the number of

job openings in those fields also suggest that other environmental constraints and opportunities are important factors in choice of field among college-level jobs. The research on job satisfaction is also consistent with our status-dominance hypothesis. Pay, which is highly correlated with occupational status, is by far a better predictor of satisfaction than is job–aspiration congruence for field of work. If status congruence is more important to men than is field congruence, the frequent failure of field congruence to predict satisfaction is not surprising. This does not mean that vocational interests and values associated with field of work are not important. If we controlled for status congruence we might find that field congruence is related more strongly to satisfaction than has been found previously. However, field interests may not be as central to a person's vocational self-concept as are status interests.

What does this status-dominance hypothesis imply for vocational theory and research? This issue is explored in detail elsewhere (L. Gottfredson, 1981), but several implications are briefly discussed below. The status-dominance hypothesis means that we need vocational theory and research that reflects a greater concern with status of work and with the social and personal background factors which influence aspirations and opportunities for different levels of work. It is clear from the research reported here and elsewhere that where one ends up in the occupational world is strongly related to personal and social characteristics which figure little in our major theories of vocational choice—intelligence, education, and family socioeconomic status. Vocational research has long documented the importance of these variables and theorists have long acknowledged this. Yet these variables play a much smaller role in our current vocational theories than they seem to play in real life.

The status-dominance hypothesis also suggests that vocational theory and research should more explicitly examine the compromise process in vocational decision making—how people cope with having to adapt their goals to the constraints they face in educational and occupational settings. It is quite clear that the labor market restricts the sorts of aspirations that can be fulfilled, that one's fate is linked with one's social and educational background, but also that people's aspirations gradually evolve so that as a group they come to want—or at least accept—their fate (e.g., L. Gottfredson, 1979; L. Gottfredson & Becker, 1981). This research reveals the remarkable picture of a population molding itself to fit the spaces available to it. Our theories must account for this total picture as well as for individual-level outcomes. We must develop theories of *constrained choice*. Some of the constraints people face were revealed in this study (see also L. Gottfredson, 1978a). If one wants a high-level job, social, investigative, and enterprising jobs are the major options; for moderate-level work, enterprising, realistic, and conventional jobs are the major options; lower-level work is mostly realistic

work; and there is very little artistic work at any level because fewer than 1.5% of jobs are artistic. Compromises between field and level may often be necessary for this reason alone. To illustrate, the major options for men in moderate-level realistic work to be upwardly mobile probably are either to go back to school or to move into enterprising work. Few employed men (0.4%) have high-level realistic jobs, whereas many more (4.5%) have high-level enterprising jobs. Furthermore, high-level enterprising jobs less often require a college education than do other types of high-level jobs (L. Gottfredson, 1978b). Perhaps this is why a large number of men shift from realistic to enterprising work in middle age (G. Gottfredson, 1977) even though this would not be expected according to Holland's theory.

Although various vocational theorists (e.g., Ginzberg et al., 1951) have stressed that compromise is an important aspect of vocational choice, they have said little about when and why people must make compromises and how they resolve the dilemmas they face. We have proposed one hypothesis which could be easily tested—that men will prefer level to field when they must choose one and sacrifice the other. For example, a pair-comparisons procedure forcing individuals to choose between two titles, neither of them being the person's first choice, would help reveal the sorts of status and field compromises men are willing to entertain. If a man prefers a high-level enterprising job, is he more willing to settle for a moderate-level enterprising job than a high-level social job? Our understanding of career development would be improved if we knew how often people faced such choices and how they resolved them.

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