

1968

Reprinted for distribution
by
Rural Sociology Department
University of Wisconsin

RURAL POVERTY IN THE UNITED STATES

Chapter 11

Education and the Occupational Achievement Process

by

A. O. Haller

A Report by the

President's National Advisory Commission on Rural Poverty

Washington D.C.: U.S. Government Printing Office, 1968

Education and the Occupational Achievement Process

A. O. HALLER, *professor of rural sociology, University of Wisconsin*

Introduction

People from several disciplines have been involved in the search for a simple yet valid explanation for variations in educational and occupational achievement. Perhaps most numerous among these are psychologists and sociologists. Vocational psychologists have brought to the problem their knowledge of the psychological causes of individual differences in behavior (3, pp. 395-410).¹ Other psychologists have brought hypotheses concerning the motives impelling achievement (23, esp. pp. 36-62). Sociologists have brought a knowledge of social environmental influences on behavior, as well as their conception of choice behavior as the selection of a limited number of alternatives from among the variety presented to the person by the social system in which he participates (5, p. 10; 17, pp. 7-17). Yet we have not achieved complete agreement. In part this may be due to isolation among disciplines. But the larger part is doubtless due to the practical difficulties involved in testing the key hypotheses proposed by the various theories. Only recently have techniques become available which permit behavioral researchers to analyze simultaneously the chains of influence among several variables (2, 9, 43). And even the best of such research (10) is handicapped by the lack of systematic and comparable data taken on appropriate variables over the whole course of occupational and educational selection processes. Researchers are often ingenious and sometimes brilliant in their attempts to overcome the limitations imposed by small, areally-restricted samples, by inadequate longitudinal assessment of changes of the process of educational and occupational development, by a less-than-ideal selection of variables, and by the practical difficulties in conducting scientific experiments on the subject. Nevertheless, if we examine the best of our research from the point of view of what *ought* to be done, we must conclude that there are still many gaps in our knowledge of the educational and occupational achievement process. What one writer (28) has said while reviewing the recent outstanding work of Coleman and others (6) on the effects of education on minority group performance

might be said of practically all of the best work in this area: "... this is not a good study . . . ; it is just the best ever done."

The main objective of this paper is to summarize present research and theory about the process of occupational attainments. In addition we shall indicate some of the main lines along which new research should be conducted, and shall draw implications regarding ways to change levels of educational and occupational achievement. Some of the information presented is indisputable, being based upon census data. But the data are less defensible when we come to specifying the causal system that accounts for such facts. Unfortunately these aspects are both more interesting to the social scientist and more important to the layman. This is because when we identify the variables in determining a system of repetitive behavior, such as the occupational achievement process, we also know at which points we can intervene in the system in order to change the behavior. As we shall see, in contemporary America the central and best understood element in the occupational achievement process is the educational achievement process. For this reason, much attention will be concentrated on the latter in this paper. Moreover, during recent years, rapid gains tending toward equalization of educational achievement have been made. This is especially true outside the rural South and among the white population, both rural and urban. The paper attempts to document the major inequalities, and to show the connection between educational and occupational achievement.

Prospects for Occupations and Education

Achievement and the Occupational Prestige Hierarchy

The occupational structure and its changes are the starting point for social psychological explanations of the occupational achievement process, specifically the prestige structure of occupations. Most of the time when sociologists refer to occupational achievement, they mean achievement along the prestige dimension of the occupational structure. This dimension is not identical to money income. Research on the social standing or prestige of occupations has shown that variations in what the

¹ Italic numbers in parentheses indicate references listed at the end of this paper.

population believes to be the quality of occupations is far from perfectly correlated with income, though the correlation is positive, as one would expect (29, p. 124; 25, table VI-8, p. 150). It is presumed that income is only one of the rewards provided by an occupation, and that prestige includes the net balance of this and other rewards. This is not difficult to understand. Some prestigious occupations, such as priest or minister, are commonly believed to bring great intrinsic rewards much more important than money; indeed, money income is often viewed as a necessary evil for such people. Or on the other hand, some necessary occupations are viewed as so degrading as to require unusual compensation in order to attract personnel. Others, not degrading, have drawbacks such as involving risk and therefore require extra compensation.

Behind the emphasis on prestige as the main dimension of occupations there lies the assumption that the importance of occupations in the social system as a whole is what the population defines it to be. It is because of this fact that the sociologist ordinarily defines occupational achievement differences among persons in terms of the prestige of the occupations they hold.

What do we know about occupational prestige hierarchies? The most important fact is that the occupational prestige hierarchy of contemporary urban societies is remarkably stable from time to time and from place to place. The prestige of various occupations has been assessed in a number of research projects in the United States. Most of the more important of these have been summarized by Hodge, Treiman, and Rossi (21). Ordinarily in these projects, each member of a sample of the population is asked to rate each of a sample of occupational titles on a short scale of "social standing" or some similar term. In the most comprehensive of these, reported by Hodge, et al., two large and representative samples of the adult population were asked to rate each of 90 occupational titles on a five-point scale, to which scores were assigned (21). Data were collected in the mid-1940's and early 1960's. A score standing for the overall social evaluation of each occupation was calculated by averaging the ratings it received from each sample member. This was done for each occupational title at both times. The correlation between the two sets of average scores was then calculated. (The base frequency here is equal to the total number of comparable occupational titles rated in each time period.) As thus determined, the correlation between the two sets of occupational prestige scores is $r = +.99$. This indicates almost no change in the occupational prestige hierarchy over a period of about a quarter of a century. All other studies of occupational prestige are technically less adequate than these but they show similar results.

The remarkable durability of the contemporary urban occupational prestige hierarchies is further attested by the high intersocietal correlations

among them. On the whole, the methods are comparable to those outlined in the preceding paragraph. There are technical and theoretical problems in such intersocietal research which are not encountered in intrasocietal projects (16). These lead one to discount to a degree the similarity between the prestige hierarchies of different societies. Nonetheless, the evidence is clear that in all urban societies studied to date—capitalist and communist, developed and underdeveloped—the correlations among occupational prestige hierarchies are very high, usually above $r = +.85$ (21).

In summary, sociologists measure occupational achievement in terms of the person's level in the occupational prestige hierarchy. They do this because they believe that prestige appropriately summarizes all of the gains an average person receives from any occupation. Their confidence in the occupational prestige hierarchy is supported by the evidence of its stability over time and its repeated reappearance in various societies.

Changes in the Occupational Structure

This is not to say that the occupational structure is fixed; indeed it is changing in several ways. The fundamental transformations are occurring in efficiency of production and regularization of decision-making. Changes in the occupational structure may be considered as consequences of our increasing capacity to produce and our growing ability to organize decision-making processes.

Fundamental transformations in production and decision-making

For generations a marked and sustained increase in the efficiency of work has been occurring. This has been manifested in at least two main ways. One is the continuing "automatization" of material production processes, to coin a word. The other is the continuing "regularization" of the human processes of decision-making, to coin another. In their respective spheres, the two are exact parallels of each other.

By automatization we mean the ever-more automatic transformation of raw or "primary" materials into usable form. The concept includes the mechanical aspects of the industrial revolution as well as the mechanical and electronic aspects of the recent techniques of automation, and in addition, any future breakthroughs in machine methods of production. Clearly, this process of constantly increased efficiency in technology exerts a continuing effect on the whole occupational structure. It exerts its effects on the sheer numbers of man-hours required to produce any given artifact; it generates new skill requirements, and makes others obsolete. On the whole, automatization has served to reduce the human work involved in production, indicated by the well-known increase in gross national product (GNP) per capita, and by a remarkable shortening of the workweek (7, 14). Because it has increased

food production and distribution and made efficient medical and sanitation systems possible, it has also permitted enormous increases in population. We shall return to this point later.

By regularization of decision-making we mean the systematization of means for obtaining and assessing information with which to determine group goals and to select means for achieving them. Regularization applies to decisions concerning material production and decisions of any one group about its behavior toward others. As the sociologist views it, regularization reduces—ultimately almost to zero—the effect of personal idiosyncracies on decision-making processes. It does so by increasing the number of persons involved in any one decision, by reducing the span of control of any one person, and by increasing the amount of knowledge, “expertise,” contributed to any single facet of a decision. That is, it is efficient to draw upon the talents of a number of people in coming to conclusions which will have important consequences for many. It may be that in the long run regularization might also release human effort, but at this point in history it seems to be absorbing more and more people who are increasingly highly trained—administrators and financial officers, for example.

Paradoxically, while automatic production releases human effort it also permits an expansion in population, yielding larger numbers of groups each of which must relate to each other. So the process of automatization increases the demand for regularized decision-making. This may well lie behind much of the growth of large government and large business. At the same time it should not be forgotten that the great increases in efficiency brought on by the two processes of automatization and regularization make it realistic to consider solving social problems or engaging in explorations we would not have dreamed of under earlier conditions: “the poor have always been with us” but only during this decade have we decided to try to erase poverty; and the moon too has always been with us, but only recently did we begin trying to visit it.

For the occupational structure the overall recent results of these processes are quite clear. Agricultural production has more than doubled since the end of World War II. Between 1947 and 1961 output per worker rose by more than 50 percent. Taking a longer view, gross national product per capita has increased about threefold since 1900 (3, p. 378; 42). Another way of putting it is to note with Zeisel and Tolley (47, p. 258) that “the proportion of all workers employed in goods-producing industries fell from 51 percent in 1947 to 46 percent in 1957 and to 42 percent in 1962” (47, p. 258). Meanwhile the average workweek has been dropping steadily for a century, from 69.8 hours per week in 1850 to 37.5 hours per week in 1960 (47, pp. 258–259; 42). In the decade and a half following 1947, more than 4 million government jobs were added. This may be compared with the following figures noted by Zeisel and Tolley (47, p. 259): “In 1962, local gov-

ernments (cities, counties, schools, and other districts) employed over 5 million workers; about 55 percent of the public employment total. State governments, with over 1.7 million workers, had some 20 percent of the total, and the Federal Government, with about 2.3 million, 25 percent.”

This, then, is the background of the present picture. Our efficiency in producing goods has released manpower and made it possible to support a larger population. Some of these have been picked up in new industries. But at the same time, growing management, service, and administrative complexities and possibilities (not to mention economies of scale) have encouraged the growth of large-scale organizations.

Changes in the distribution of occupations

Basic continuing changes in the distribution of occupations affect the duties, skills, and physical characteristics required of the people in the work force. Some of the net effects of these changes are to specify the duties of particular occupations more rigorously, to raise the required skill levels, and to reduce the demand for physical strength. The following are some of the specific changes in distribution of jobs and occupations which have been occurring.

OBsolescence.—Every year, a number of occupations tend to go out of date, such as those being replaced by automatic machinery. This process occurs by cutting back the number of positions available in a certain occupation. Technological changes have sharply restricted employment in unskilled labor—dropping them by about 10 percent between 1950 and 1960. Some of this effect is doubtless reflected in the fact that employment in forests, fishing, and mining dropped by 29 percent during the 1950's. Other industries once employing large numbers of unskilled or semiskilled persons have shown similar trends: during the same period employment in furniture manufacturing dropped by 10 percent; in the metals industry it decreased by 26 percent; and in the textile industry employment fell by 23 percent (47, p. 262).

EXPANSION OF WHITE-COLLAR WORK.—Increases in the governmental and service sectors have also greatly influenced the overall picture. Highlighting a trend noted for at least a half century, employment in professional, technical, and kindred occupations increased by 47 percent during the 1950's. Also, clerical workers increased by 34 percent, service workers by 25 percent, and sales workers by 20 percent (47, p. 260).

EMERGENCE OF NEW OCCUPATIONS.—Emergence of new occupations is not so easy to document statistically. But obscured by the broad categories in which occupational changes are presented lies the growth of occupations that previously did not exist, or which are so radically different from their predecessors that they may be considered changes in kind

rather than degree. The space and missile industries have provided many of these. Increasing specialization and the growth of cross-disciplinary fields in science provide others.

NEW DUTIES FOR OLD OCCUPATIONS.—Like the above, documentation is difficult to provide here. But the phenomenon is real nonetheless. Perhaps one of the more outstanding examples is to be found in farming. Consider the farmer at the turn of the century. Self-powered equipment was practically nonexistent. Because the market economy was not as all-pervasive as today there was little demand for production records. Nor was there much demand for literary skills. Today the farmer cares for tractors and other powered equipment and many other devices made possible by such machinery, while he no longer needs to know much about caring for draft animals. One hardly need point out that today part of his job includes careful estimation of costs and benefits, while another part includes a constant search for new information. In like manner, almost any occupation that has survived the revolution in mechanization of activity has done so by adapting to it, and in the process has been transformed.

WOMEN IN THE WORK FORCE.—There has been an increase in the number of occupations requiring social and clerical skills, but which do not require long periods of experience on the job. At the same time the demands for brute strength have dropped off. Simultaneously there has been a relaxation of the taboos concerning work for women. Then, too, many of the routine housekeeping duties which once kept women in the home have been taken over by machines, and a smaller proportion of a woman's life is tied up with young children. Many women now enter the work force several times during their lives. Others are continuously employed on a regular basis. Thus the net effect is that the average age of American working women was recently estimated at around 38 years. Girls in high school are expected to spend about 25 years of their adult lives in remunerative work (42).

The general rise in the occupational prestige hierarchy

With a few individual exceptions, there is a long-term upward drift in the occupational structure. On the whole, obsolescence eliminates low prestige occupations. The expanding white-collar sector, too, consists of occupations which are substantially above the bottom of the hierarchy. Also, the newly emerging occupations appear to be mostly those of high skill requirements and of moderate to high prestige. Finally, many older occupations seem to be undergoing a remarkable degree of upgrading. In recent years public universities have instituted specialized courses, usually short summer sessions, for many occupations which were once believed not to require any information that could not be learned with a few weeks on the job. Not all such courses

are short. For example, a few universities now offer degree training leading to both the bachelor's and master's degrees in police work. Also, workers in some fields have organized themselves into voluntary associations which emphasize what is called "professional development." A nationwide secretaries' association, for example, provides a series of examinations over various levels of duties of secretaries and supplies rewards for those who pass them. Obviously, State and national civil service examinations provide the same function by requiring specific minimum standards of performance.

Thus two general changes tend to raise the level of the occupational prestige structure as a whole. One that has received much attention includes obsolescence of old, lower status occupations and the emergence of new occupations toward the top of the system. The other, less well known, consists of the upgrading of old occupations. The material presented in the preceding paragraph merely illustrates this. The main evidence that the net effect of the basic transformations on individual occupations is to raise the entire prestige hierarchy is presented in Hodge, Siegel, and Rossi (20). These writers present data on the changes in the prestige of samples of occupations from data taken in about 1925, 1940, 1947, and 1963. Almost all the changes, particularly in the more recent data, are in a positive direction. Data on the social psychological reasons for this do not exist, but one would suppose something like the following is happening. Prestige is assigned to occupations as a reward for applying scarce skills to activities people believe to be important. Occupational upgrading is a process which, by improving the worker's skills, makes his contribution more unusual, and therefore scarcer and more valuable.

Occupational Prestige, Income, and Education

The interpretation just presented, in which changes in the occupational prestige hierarchy were related to occupational upgrading, strongly suggests that changes in education are tied up with the changes in the occupational structure. We shall present data on this later, and will follow that presentation with data on education and income. But first let us review the relations between occupational prestige and education.

Occupational prestige and income

It is well known that the average real income of American families has been rising almost steadily for many years. In his recent work on the subject, Miller presents data showing that between 1929 and 1962 the average real personal income per family, calculated in 1962 dollar-equivalents after income tax, rose from \$4,200 to \$6,400 per year, or to about 155 percent of the earlier value (25, table I-3, p. 9). Moreover, all levels of the income distribution appear to be rising at about the same rate, especially since 1944. During this period there is practically

no change in the proportion of total personal income received by the top, second, middle, fourth, and lowest fifths of the income distribution (25, p. 3). Similarly, there is almost no change in the proportion received by the top 5 percent from 1947 to 1960 (25, pp. 20-25).

More to the point, there is a substantial, though imperfect, relationship between annual income and occupational prestige position. Presenting data for full-time, year-round male workers only, for example, in 1960 the median wage of salary income of nonfarm managers, officials, and proprietors was \$7,241. That of clerical and kindred workers was \$5,247, of operators and kindred workers (roughly, skilled workers) \$4,977, that of laborers (except farm and mine) \$3,872, that of farm laborers and foremen \$1,731. As an important exception, professional, technical, and kindred workers tend on the whole to outrank nonfarm managers, officials, and proprietors in prestige, though their ranks for median salaries are reversed; the former received \$6,848. This is probably due in part to the fact, to which we referred earlier, that prestige includes nonmonetary returns. The trend data, of course, are approximately consistent with the above. From 1939 to 1960 the increase in median income for male workers was 221 percent. For nonfarm managers, officials, and proprietors it was 238 percent. For clerical and kindred workers, and operators and kindred workers it was 325 percent. It was 280 percent for laborers (other than farm and mine). Finally, for farm laborers and foremen it was 189 percent. (Note that operators, etc., experienced a disproportionately high increase, while farm wageworkers suffered a disproportionately low increase.) The figure for professional, technical, and kindred workers is 251 percent (25, table III-6, pp. 82-83).

Occupational prestige and education

Everyone knows that occupational prestige and education are positively correlated. Nonetheless a few data on the subject may not be out of place.

Duncan and Hodge present 1950 data, drawn from about 1,100 men in Chicago in 1951, on the relationship of educational attainment with occupational socioeconomic status (9, 10). Their covariance data can be easily reduced to pearsonian correlation coefficients by taking the square roots. When this is done the correlation is shown to be about $r = +.55$. In another project, based on questionnaire data taken first in 1948 on 383 boys who were then juniors and seniors in Jefferson County, Wis., and who were restudied in 1955, Sewell and his colleagues found a similar correlation between educational attainment and occupational prestige: $r = +.60$ (33). For a one-third random sample of Wisconsin seniors in 1948 who were restudied in 1955, Sewell found correlations on these variables of $r = +.62$ for males and $+ .43$ for females (33). For the subsample of this group, consisting of farm

boys, Sewell, Haller, and Portes found a correlation of $r = +.58$ (36). Except for one's occupational prestige status at earlier periods (9), it appears that no other factors have ever been shown to be so highly correlated with occupational prestige status.

These data support what we already knew in that they show occupational prestige status and education to be tied to each other. One could easily argue that several practices are in fact tightening the dependency of occupational achievement on education. There appears to be professionalization of an increasing number of occupations. Along with this, it appears that there is an increase in licensing and other procedures specifying minimal formal educational requirements for various occupations. Some large companies use college graduation as a necessary condition for employment in management and technical jobs. Finally, we have already noted that many may move up in their organizations only by passing examinations, and that some voluntary organizations encourage self-improvement by means of examinations and awards for superior work performance. If these observations are well-founded, they imply that a general rise in the educational levels of each major occupational prestige level has been going on for some time.

Evidence on changes in median years of school completed show this to have been occurring. Between October 1948 and March 1964 the median educational levels for all civilian workers 18 or more years old rose from 10.6 to 12.2 years. For males the change was from 10.2 to 12.1 years; for females from 11.7 to 12.3 years (46, p. 227). A study of the detail of these data shows that from 1948 to 1962 the median number of years of school completed rose for almost all occupational categories for both males and females. Interestingly, rough calculations show that white-collar occupational classes such as professional, managers, clerical workers, and sales workers advanced but little (about .2 year on the average) during the period. On the other hand, blue-collar occupations such as craftsmen, operatives, laborers, and farmers advanced substantially (about 1.2 years on the average). Does this mean that while educational requirements are stiffening at all occupational prestige levels, they are stiffening most rapidly at the lower levels?

Education and income

The relations between education and income are complicated during the years people are finishing school and starting to work. However that may be, education appears to be a profitable investment. For the male working population of 18 to 64 years of age, 1959 mean average earnings by education were as follows: less than 8 years of school, \$3,659; 8 years, \$4,725; 1 to 3 years of high school, \$5,379; 4 years of high school, \$6,132; 1 to 3 years of col-

lege, \$7,401; 4 years of college, \$9,255; 5 or more years of college, \$11,136 (25, *table VI-3, p. 139*). In other words, those who completed at least 1 year beyond college averaged much more than did those who completed less than 8 grades of school.

For both whites and nonwhites, men with more years of education make more money. But there are important differences related to race. Though off the immediate topic, race differences deserve attention here because they are involved in the whole issue of variations in occupational achievement. From Miller's data, the 1959 earnings of nonwhite men have been calculated as a percentage of those of white men (25, *pp. 139-140*). On the average, American white men between 25 and 64 years of age earned 87 percent per year more in 1959 than comparable nonwhites. The respective means are \$6,112 for whites and \$3,260 for nonwhites. In the North and West whites earned 50 percent more than the amount earned by nonwhites, while in the South the figure rose to more than 100 percent. It might be tempting to attribute these differences to race differences in number of years of school completed. But this is not the case. With but one minor exception,² for each category formed by cross-classifying major regions by age groups and by years of school completed, white men earned more than nonwhite men. Controlling for education, the earnings of whites range up as high as 200 percent of those of nonwhites (among southern men completing 4 years of college). Perhaps most important of all, for every category of age and region, the greater the number of years of school completed, the greater the proportionate and absolute difference in earnings. It seems unlikely that this trend is due just to discrimination on the job. It is more reasonable to suppose that the higher the level in school the more superior is the quality of education received by whites. This would be reflected in increasing differences in competence and finally in the observed increasing proportional differences in earnings (25, *pp. 139-140*). Thus the discrimination most affecting differences in earnings would have occurred during the school years and would have been first manifested as poor education.

Summary

The sociologist measures occupational achievement by assessing the prestige of the person's occupation. Money income is not the only reward for high achievement, and occasionally it is used to attract workers to undesirable jobs. Thus the correlation between money income and occupational achievement (prestige) is far less than perfect. But, though imperfect, such a correlation exists and it is positive: on the average, the higher the prestige of the occupation the higher the income. Next, as we

² In the West nonwhite men 18 to 24 years old who had completed less than 8 years of school earned slightly more than comparable whites (\$2,274 to \$2,151).

would expect, occupational prestige and education are positively, though imperfectly, related: The higher the education the higher the occupation. So we would have assumed, as many have, that if one is paid for his work contribution, and derives much of his work ability from education, then differences in years of school completed should ultimately result in differences in income. Data were adduced to show that this occurs. But in the process we discovered that the income derived from increasing the number of years of school completed is substantially greater for whites than for nonwhites. The question was raised as to whether this might be due to variations in the quality of education received by whites and nonwhites. Suggestions for answering this question are presented later in connection with a more systematic analysis of the factors influencing educational achievement.

Rural-Urban Variations in Educational Achievement

Clearly, education comprises the most important class of variables needed to account for variations in occupational achievement, and most research efforts have been directed to this end. Shortly, we shall proceed to review some of the evidence on this subject and shall ultimately attempt to provide the beginnings of a social psychological explanation for these variations. But before doing so it will be useful to show the rural-urban variation in our central variables. To do this we shall first present the evidence that rural-urban differences in nonfarm occupational achievement do in fact exist and then show the relation of region and race to rural and urban residence. Some of the most intriguing evidence on what seems to be in part a rural phenomenon is presented in the form of regional or racial categories. We shall then present data on rural-urban differences in educational achievement, using regional and race data to supplement them.

Rural-Urban Differences in Occupational Achievement

For some time, evidence has been available regarding rural-urban differences in occupational achievement. Most of this work is cited elsewhere (5, *p. 10*). In general it shows that farm-reared men have low levels of occupational achievement, that men reared in small towns have somewhat higher levels, and that urban-reared men have still higher levels. These comparisons are based on the nonfarm population. Less evidence is available for women. The best available data, taken in 1952, show that farm-reared women have lower levels of achievement than nonfarm-reared women. Both of these groups have lower levels of achievement than urban-reared women (12). Truly up-to-date information on this topic appears not to be available. In 1964,

the U.S. Department of Agriculture issued a report based on a 1958 national sample, drawn by the Bureau of the Census, of 35,000 households (*I, table 8, p. 13*). Data were taken on noninstitutionalized civilians 18 years old or more. Despite the age of the data and the fact that the categories are a little broader than would be ideal for present purposes, they are still the best available. Data are presented for the employed nonfarm population, classified by white-collar, blue-collar, and farm occupation, by farm or nonfarm birthplace, and by age. Analysis shows, first, that the farm-born, as expected, turn out to be underrepresented in the ranks of the white-collar workers and overrepresented among blue-collar workers. Second, the percentages change but little with the age of the worker. For example, in the 18 to 24 age group, 34 percent of the farm-born were in white-collar jobs, while 53 percent of the nonfarm-born had such jobs, a difference of 17 percent. Similarly, in the 45-54 age group 37 percent of the farm-born had white-collar jobs, while 51 percent of the nonfarm-born had such jobs, a difference of 14 percent.

Moreover, the age-related changes give no hint that the influence of farm origins on low levels of nonfarm occupational achievement may be decreasing with time. If anything, they suggest the possibility that such differences may be gradually widening. These trends are clearer when followed by calculating farm-born versus nonfarm-born differences in the percentage who became blue-collar workers. Among those 65 and over, only 3 percent more of the farm-born than of the nonfarm-born became blue-collar workers. Among those 55 to 64 years old the difference is 7 percent. Among those from 45 to 54 years, the difference rises to 12 percent. For those 35 to 44 years of age and for those 25 to 44 years of age, the difference is 13 percent. Finally, for those 18 to 24 years of age, the difference rises to 17 percent. What is happening is that the younger the group, the smaller the proportionate contribution of the farm-born to the white-collar stratum; and the larger the proportionate contribution of the farm-born to the blue-collar stratum. An important part of this effect comes about because the farm-born from 18 to 24 years of age up to 45 to 54 years of age are contributing to the blue-collar stratum a proportion which earlier the older farm-born contributed to the then larger farm operator stratum.

For the farm-born sector of the country as a whole, the data thus confirm a finding encountered in various parts by using several different indexes of rurality. The nonfarm levels of occupational achievement of rural people are substantially lower than those of the rest of the population.

Rural-Urban Aspects of the Regional and Racial Distribution of the Population

Today, the best single index of rurality of a region is still the proportion of the region's population who live on farms outside urban places. By

this measure the South remains the most rural of the major regions of the country. It should be recognized that the farm population is decreasing at a rapid rate—4.6 percent per year between 1960 and 1965. Also, there may well be important regional differences in the rates of our flight from the land. Indeed, between 1960 and 1965 the number of nonwhites residing on farms decreased by 41 percent, while the number of whites decreased by 17 percent. Since many nonwhites live in the South we can be sure that region is catching up with the rest of the country in this regard. Yet, when all such qualifications are taken into account, the main concentration of farm people is in the South. For example, in April 1965, 44 percent of the farm population resided in that region, while the South's proportion of the total population was about 20 percent (44).

Rurality is also confounded with race. Of the nonwhite population (four-fifths of whom are Negroes) 16 percent lived on farms in 1965, while 6 percent of the white population did so. So it is doubtless true that a disproportionate number of Negroes still live on farms (44, 45). Moreover, practically all of these live in the South; there are almost no Negroes on farms in the North and West.

Rural-Urban Differences in Educational Achievement

We have seen that we need to understand the ways education influences people in order to understand occupational achievement. To understand rural-urban variations in nonfarm occupational achievement we must therefore examine the school performance of rural and urban people. This will be accomplished by reviewing evidence on comparison of school completion as indicated, first, by educational levels of adults, second, by dropout behavior as indexed by school enrollment rates of youths, and third, by achievement and ability test performance. This will set the stage for an examination of the factors determining variations in educational achievement, which is the subject of the next section.

School completion

Nam and Powers have presented the most comprehensive analysis of rural-urban, regional, and race differences in number of years of school completed (27). Their report is based on census data.

The data they present show that school completion data are, of course, based on the population no longer of school age. They therefore reflect changes in school attendance which occurred during earlier periods. The 1960 population had completed substantially more years of school than had the 1950 population. This held true among rural and urban people, among northerners, westerners, and southerners. Naturally, this is a continuation of a long-term trend among whites and nonwhites. Yet the rural-urban differences persisted. In fact, for nonwhites the distance between rural and urban people

increased a little. The overall pattern for 1960 was as follows: urbanites had completed the highest number of years of school, rural nonfarm people the next, and farm people the least. There were, too, fairly substantial differences among regions. On the whole, people of the South had completed the fewest years of school. Those of the North Central region were next, westerners completing the most. The South, however, was second to the West in proportion of whites who had attended college. As our history leads us to expect, nonwhites had completed fewer years of school than whites. Because of the combined effects of residence, region, and race, we would expect that white urban westerners would show the largest proportions completing college and the smallest completing no more than eight grades. This holds, with the respective percentages being 24.5 (1 year or more of college) and 26.4 (0-8 years of school). The combined effects of these variables also suggest that nonwhite southern farmers would show the smallest proportion completing college and the largest proportion completing no more than eight grades. This, too, holds, with the respective percentages being 2.1 (1 year or more of college) and 85.4 (0.8 years of school). It should be added that college attendance rates during that year were less than 10 percent for all categories of nonwhites except urban westerners (27, *table 1, p. 122*).

College enrollment in 1960 of American students who were high school seniors in October 1959 has been reported by Nam and Cowhig (26). They found that urban graduates were more likely to enroll in college than were rural graduates, but there was little effect of race on the college enrollment of high school graduates. No data on regional differences were presented.

In summary, though the overall figures were higher in 1960 than in 1950, there were still substantial differences in educational achievement among residence groups in 1960, urbanites first, rural nonfarm people second, and farm people last. Nonwhites were generally low, but were lowest in rural areas. Except for the percentage of urban whites attending college, southerners in each category had the smallest percentage who had attended college and the highest who had not gone beyond the eighth grade. Roughly the same residence trends were observed for college enrollment of 1960 high school graduates. No important race difference was noted, however, and regional variations were not reported.

Dropout behavior

It is easier to talk about dropout behavior than to study it. The term implies a sense of finality that existing data do not plumb. However, the term reflects a common occurrence. Not quite half of the population 25 years old or older had graduated from high school in 1960. No doubt most were drop outs. Enrollment rates of 16- and 17-year-olds of various social categories provide a fairly good way of

handling the problem. For 1960, Nam and Powers have analyzed rural-urban, regional, and race differences in this variable quite well. Judging by the high percentage of these age groups enrolled in school (86.3 percent of the 16-year-olds and 75.6 percent of the 17-year-olds) one would suppose that the trend toward completing more years of school was continuing (27). An examination of their data (*table 7*) shows that the rural population in each region made larger gains in the proportion of these age groups enrolled in school than did the urban population. Over the nation as a whole, the enrollment of urban youth 16 years old increased from 85.2 to 87.5 percent and of urban youth 17 years old from 72.8 percent to 76.7 percent, for gains of 2.3 and 3.9 percent, respectively. On the other hand, the enrollment of rural youth 16 years old increased from 75.5 to 84.3 percent, and of rural youth 17 years old from 62.1 to 73.6 percent, for gains of 8.8 and 11.5 percent, respectively. The largest gains for both rural and urban youth were in the South.

In the years before 1960, an interesting switch occurred. As we have seen, among adults the farm-reared population lags behind both the urban and rural nonfarm. By 1960 the farm population had crept ahead of the rural nonfarm people. Indeed, the highest single level of enrollment of 16-year-olds, including urbanites, is to be found among the rural farm population of the North Central region, and the highest two categories among 17-year-olds are the rural farm population of the West and the North Central regions.

But looking at the 1960 overall picture, the differences are small between urban, rural nonfarm, and farm groups of these ages. The urban and farm categories are about equal, with the rural nonfarm lagging slightly behind. By regions, the West was highest, followed by the North Central States, the Northeast, and the South, in that order. Nonwhites lagged behind the total population by about 8 or 9 percent.

Looking at some of the finer details, we find that the enrollment rate for northeastern nonwhite 17-year-olds, 55.7 percent, is the lowest of all. The Nam-Powers data also show that among rural nonfarm population of the Northeast the enrollment rate for 17-year-old nonwhites lags by 20.7 percent (75.9 minus 55.7 percent), which is the greatest single racial discrepancy. Other important racial discrepancies include the following: north central 17-year-old rural nonfarm youth, 16.1 percent (77.9 minus 61.8 percent); northeastern rural farm youth, 15.3 percent (86.0 minus 71.7 percent); northeastern urban youth, 13.5 percent (76.2 percent minus 62.7 percent). (Curiously, in the Northeast, the nonwhite farm 17-year-olds fared slightly better than the average for all farm youth of that age, 80.5 and 75.6 percent, respectively.) Contrary to popular opinion, the South showed the least racial discrepancy in school enrollment of 16- and 17-year-olds.

In summary, the 1960 variations in enrollment rates for 16- and 17-year-olds were not as great

as those for school completion. This is true for rural-urban residence, region, and race. There was not much difference between urban and farm youth, but rural nonfarm were behind. Though it was behind the rest of the country in most enrollment rates of 16- and 17-year-olds, the South had the smallest racial discrepancy and indeed had higher than average enrollment rates for nonwhite residents of rural nonfarm areas.

Achievement test behavior

Coleman and his colleagues have recently produced the most comprehensive and thorough study ever done of regional, residence, and racial differences in test performance and of aspects of the environment of public school children thought to be relevant to the quality of education (6). Considerable information was collected, including data on individual students, their teachers and guidance counselors, and their schools. Perhaps most important, the data were collected on all children in grades 1, 3, 6, 9, and 12 in a sample of the nation's schools. Reasonably complete information was available from 70 percent of the high school principals and from 67 percent of the high school classes whose students were tested. Special checks appear to show that though sampling biases were introduced, they do not affect the outcome substantially.

Within any grade studied, all students in the sample took the same set of tests. Thus the data within a class are essentially comparable. The data we shall summarize at this point are the results of the tests of (1) verbal ability, (2) nonverbal ability, (3) reading comprehension, and (4) mathematics achievement. There is no need to make a deep analysis of these tests here. It is enough to point out that the science of test-building is quite well-developed. These tests, taken together, detect differences among students in their abilities to understand what they read, to make logical deductions and inductions, and to manipulate numbers and mathematical symbols. These abilities—learned or unlearned—are the basic mental skills needed for coping with and contributing to contemporary urban-industrial society. There are but two glaring omissions in the tests—the failure to assess the individual's capacity to cooperate with others, and his ability to communicate orally and in writing. These omissions are, unfortunately, characteristic of much of the otherwise admirable work of modern educational testing.

Standard tests of each of these four variables (and some others we are ignoring here because they seem less basic) were administered to each student in each of the five grades (1, 3, 6, 9, and 12), except that the first graders did not take reading comprehension and mathematics achievement tests. The test data which are most important for present purposes were reduced to percentile and *T*-score form ($\bar{X} = 50$ and $\sigma = 10$) and are presented in graphs. Most of the results reported here are from analysis of the graphs.

Test response data are presented for residence (metropolitan and nonmetropolitan location of school), race (whites and Negroes), region (South, Southwest, North, and West—sometimes Northeast, Midwest, and West).³ In addition, data are presented for various minority groups: Puerto Ricans, Mexicans, Indians, and Orientals. These groups, unlike the others, are not subdivided by region and size of place. To anticipate a bit, the Orientals tended to perform about like the whites do. For this reason we have taken no special note of them in the ensuing presentation, although the other minorities receive some attention.

We have studied the crucial tables from the Coleman report (6, pp. 221-245) and have summarized the main apparent effects of metropolitan-nonmetropolitan location, region, and race for each of the above tests.

(1) **VERBAL ABILITY**—Those attending metropolitan schools appear to outperform those attending nonmetropolitan schools at all grade levels tested: 1, 3, 6, 9, and 12. For the lower grades (1 and 3) there is no discernible effect of region. For the higher grades (6, 9, and 12) the Northeast and Midwest appear to be highest, the South lowest, and other regions in between. Whites outscore Negroes in all grades; this is the most outstanding effect. In the 6th and 9th grades the Puerto Ricans, Mexicans, and Indians do poorly, but this effect is not present in the 12th grade, possibly because the lower scorers have dropped out.

(2) **NONVERBAL ABILITY**—Little if any metropolitan-nonmetropolitan effects are noticeable for grades 1 and 3. In grades 6, 9, and 12 the metropolitan are higher. Neither is there any obvious effect of region in grades 1 and 3, except for an analogies test in grade 3, where the Northeast and Midwest were high, and the South low, with others between. This latter regional pattern also holds for grades 6, 9, and 12 except that for grade 6 the Southwest is about as low as the South. Whites systematically outscore Negroes, and in grades 6 and 9 the Puerto Rican, Mexicans, and Indians are again low.

(3) **READING COMPREHENSION**—Again, there is not much, if any, effect of metropolitan-nonmetropolitan location of the child's school (an index of the rural-urban variable) on reading comprehension for grades 3 and 6. First graders did not take this test. In grades 9 and 12, however, the metropolitan students tend to be higher than the nonmetropolitan. Next, there is no discernible regional effect in the data on 3d graders. But among 6th, 9th, and 12th graders, those from the Northeast and Midwest

³ The Northeast evidently includes New England and the other Eastern Seaboard States south through Washington, D.C. The Midwest evidently includes all other States bordering on the Great Lakes plus Iowa, Kansas, Missouri, Nebraska, and the Dakotas. The South includes Arkansas and all States on or east of the Mississippi River not already identified. The Southwest includes Arizona, New Mexico, Oklahoma, and Texas. The remaining States including Alaska and Hawaii constitute the West.

tend to outperform those of other regions, while those from the South (and in the case of grade 12, the Southwest) tend to perform at a lower level than the others. Again, whites systematically outperform Negroes. In grades 6 and 9 the other minorities (Puerto Ricans, Mexicans, and Indians) are low, but as on previous tests this effect does not persist into grade 12.

(4) **MATHEMATICS ACHIEVEMENT**—The pattern of influences on mathematics achievement of students is similar to the patterns we have already discussed. By the 6th grade, metropolitan students tend to be outscoring the nonmetropolitan students, though there is little difference among 3d graders. There is no regional difference in mathematical achievement in the 3d grade. But in the 6th grade the northern children make higher scores and the southern and southwestern children make lower scores, with westerners in between. In the 9th and 12th grades, the northerners and westerners appear to be about equal to each other and score higher than the southern and southwestern students. Again, whites systematically outperform Negroes, and the low scores for Puerto Ricans, Mexicans, and Indians which persist through grades 3, 6, and 9 are no longer evident in grade 12.

There is one unusual fact about the mathematics achievement data. The distribution for Mexicans, Puerto Ricans, Indians, and all categories of Negroes is sharply skewed in the 6th grade. This skewing results from a large proportion having exceedingly low scores which are about equal to each other; the high scorers are much more variable. The same phenomenon is observed in the 12th grade metropolitan western and nonmetropolitan southern Negroes. It appears in no other grades or categories of students, and on no other tests. One could hypothesize that since mathematics is a difficult subject—or is thought to be—a poor performance in mathematics is one of the earliest symptoms of readiness to drop out of school. A great many minority group members, we might suppose, are already disheartened with school by the 6th grade. This is reflected in their mathematical test performance, and they drop out at the first opportunity. This eliminates most dropout-prone Mexicans, Indians, and Puerto Ricans, as well as many such Negroes. In the nonmetropolitan South and the metropolitan West quite a few dropout-prone Negroes remain to continue into high school, when the same sort of discouragement sets in by the time they reach the 12th grade. This too, is reflected more clearly in their performance in mathematics, a "hard" subject, than in other subjects over which they were tested. We shall return to this type of issue in the next major section.

(5) **SUMMARY OF TEST RESULTS**—(a) The major finding of the research reviewed here is that at all levels and for all types of tests the performance of Negroes is quite a bit lower than that of whites. Indeed, Coleman and his associates show that the gap between whites and Negroes often widens as the students progress into higher grades. Puerto Ricans,

Mexicans, and Indians also tend to do progressively more poorly up to a point between the 6th and 9th grades, after which their performance improves, probably because the poorer students have dropped out of school. (b) The rural-urban variable is approximated here by a metropolitan-nonmetropolitan classification. Differences on this variable are less pronounced than on race. But they exist among 9th and 12th graders for all four tests, among 6th graders for mathematics and nonverbal ability, and among 1st and 3d graders, as well, for verbal ability. (c) Similarly the southern, and sometimes the southwestern, students perform less well than do all others, especially northerners, from the 6th through the 12th grade on all four tests. There is little if any effect of region among 3d graders on any of these tests or among 1st graders on the two tests they took (verbal and nonverbal ability).

Thus, racial differences exist at all levels and for all tests. But, on the whole, residence and regional effects begin to show after the 3d grade. And in all cases it is the categories that are presently or historically the most rural—the Negroes, the southerners, and the nonmetropolitans—which show the poorest test performance.

Summary

The first section explained the sociologist's contention that occupational prestige is the key variable by which to approach the measurement of occupational achievement levels. Secondary data were then presented to show, among other things, the ties of education to occupational prestige. The present section shows first that there are, or were, large differences in prestige levels of nonfarm occupational achievement of people reared in rural and urban areas. These differences justify an investigation of rural-urban, and related regional and race, variations in school behavior. Even so, because the data are based on adults of some years ago, we do not really know whether today's rural youth are still entering the nonfarm occupational structure at unusually low levels, but it would be surprising if they were not.

Data on school years completed by the adult population in 1960 really refer to events that happened years earlier when these adults were of school age. There are substantial differences between people of urban, rural nonfarm, and farm origins. They also show substantial regional and race differences. Regional differences are in this order: the West (highest), Northeast, North Central, and South (lowest). Nonwhites were much lower than whites.

Data on school enrollment of 16- and 17-year-olds in 1960 are more up to date. They show relatively small differences in enrollment rates by residence, and there was no important difference at all between urban and farm youth, though these were a little higher than rural nonfarm youth. Differences between regions were a little greater, in this order: West (highest), North Central, Northeast, and

South (lowest). White-nonwhite differences were not very large either, though they existed. They were almost negligible in the South and tended to be especially large in the Northeast.

Test performance data (verbal and nonverbal abilities, reading comprehension, and mathematical achievement), of children in school in 1965 are obviously still more up to date. They show relatively small differences favoring metropolitan students over nonmetropolitan. (Data are not available for rural nonfarm or farm students as such.) Also, students from Northern States tend to score higher than those of the Southeast and, to a lesser extent, the Southwest (excluding California). The sharpest differences, however, are between whites and other major minority groups: Negroes, Mexicans, Puerto Ricans, and Indians. Moreover, the higher the school grade the farther behind their peers the Negroes fall. One can infer this would be true of the other minorities, except that the poorer students among them may drop out of school earlier, leaving the high scorers to inflate the test averages.

It thus appears that there are some important trends occurring. Rural-urban differences, as such, in precollege school enrollment may no longer be very pronounced. Regional differences in enrollment may also be disappearing. Race differences in attendance seem to be dropping, too. We cannot say for certain whether the "learning gaps" are being closed. From test data, it appears the rural-urban differences as such are not very great, and that regional differences are not either, though nonmetropolitan and southern students have lower scores than others. The race gap in attendance is closing, but race differences in learning may not be doing so, especially among Negroes in the South and Southwest and among Mexicans, Puerto Ricans, and Indians (6, pp. 257, 258, 272). Interestingly, there is very little racial difference in college enrollment rates of high school graduates (26).

Despite the fact that they are not so different in the externals, such as years of school completed and school enrollment, the rural southern and southwestern Negroes are clearly the students who are least prepared for satisfactory achievement in the modern occupational structure.

Variations in Educational Achievement

Clearly, if we are to understand the occupational achievement process, we must formulate a valid explanation of the educational achievement process. Not that we lack theories relating to occupational achievement. On the contrary, there are several. The current ones are reviewed by Borow (3). Among the more influential of these are Ginzberg et al., Roe, and Super. Ginzberg et al. stress stages of occupational decision-making, in which each later stage is more reality-oriented than the former. These begin during the elementary school years and continue until the person is established (14). Roe cross-

classifies occupations according to level and function, and then attempts to match personality needs (developed early in life) with job characteristics (31). Super has stressed the key role of the self-concept in determining the individual's occupational behavior (41). The need for objective evaluations of recent large-scale educational programs has probably been partly responsible for an increasing emphasis on interrelating research and theory regarding psychological aspects of vocational development, one which should begin to bear fruit within a few years. No definitive publication has yet come from the newer lines of thinking.

In any case, there are at least three related aspects of most such psychological thinking which make it less useful for present purposes than would be hoped. First, these are theories of "vocational" development as a whole, not simply theories of occupational achievement. Frequently, their major thrust is to understand and improve the adjustment of the individual rather than to determine the process by which people are allocated to different social statuses. This leads to a relative neglect of the occupational achievement process in itself.

Second, most of the theoretical work gives insufficient attention to the occupational hierarchy. Rather than seeing the occupational achievement process as one of entering and becoming stabilized at a point on or region of a continuum of occupational prestige, thus anchoring achievement in the societal system of stratification, most writers see the individual as selecting a relatively unique occupation or class of occupations, one which is not rigorously ordered by a clear specification of its relation to other locations.

Third, and most fundamental, experimental psychological researchers deliberately treat each individual organism as if it existed in exactly the same environment as every other organism, and as if the only environmental influences bearing upon it were those provided by the experimenter. We may call this "the assumption of the isolated individual." In psychology, it is the equivalent to the physicist's experiment in a vacuum, or to the chemist's experiment conducted under "standard conditions." As a methodological ideal for studying certain kinds of behavior, it is highly appropriate. Unfortunately, it pervades much psychological thinking where it is not appropriate, including occupational choice. But the occupational achievement process is enacted in a world in which people influence each other, and in which some influences wane while others wax. A useful theory must be able to identify and specify the changing effects of each of the variables needed to describe the interplay between each person and his changing social environment.

SOCIAL-PSYCHOLOGICAL PERSPECTIVE—The present position attempts to allow enough individual plasticity to account for major changes in the person's modes of reacting to his environment, while at the same time avoiding the assumption of infinite plasticity. Three assumptions are made about the great

majority of youths whose school behavior is the concern of this section: (1) That most of those who do well or who do poorly in school are usually so similar in the *biologic* aspects of mental ability that, for the most part, we can assume that *environmental* factors are ultimately responsible for variations among them in achievement. (2) That the behavior of people is directed by the ways they conceive of themselves, by their goals, and by the available information that might aid them in achieving their goals. (3) That self-conceptions, goals, and other information are learned in and sustained by interaction with others. We shall elaborate each of these points.

(1) One of the major learning tasks in the life of any person is largely finished even *before* he or she enters school. It is a task of huge proportions, yet practically all 4- or 5-year-olds have, for the most part, completed it. Children in all societies, even the so-called primitive groups, perform it well. Most of the best and the poorest students differ little in this respect from other youngsters: they have learned a language.

What does it mean for a child to learn a language? It means that he has learned an enormous number of details and general rules. He has learned a vocabulary of words and how to put them together into an ordered system. He has learned a grammar. It is true that ordinarily he makes more mistakes with his grammar than do adults, but his mistakes are so few that he can understand his parents, his friends, and others—even strangers. He can usually respond or initiate to them so that they understand the meanings he attempts to convey. To the child, learning a language is as natural as exploring his neighborhood. As adults, we cannot recall our own first experiences in learning our native language, but we remember when we tried to learn a foreign language. Perhaps we studied it for 2 or 3 years in high school or college. We remember the great difficulty we had and the hours we worked to learn the words, to conjugate the verbs, and above all to place subjects, predicates, etc., in their proper places in sentences. But for all our hard work, we know very well that our understanding of the language is still superficial. If we do not realize it while we are in school we soon find out when we meet someone who handles the language fluently.

Yet the child learns the language of those around him so thoroughly that, despite a few idiosyncracies in grammar and pronunciation, he is a master of it. He speaks and listens almost effortlessly; certainly he does not usually struggle to remember what a certain word means, as most of us do when we use a language other than our own.

Most students have few if any major physical impediments to seeing, hearing, speaking, understanding, getting around. They know a language; they have already proven that they can learn exceedingly difficult material because they learned the language. And they daily prove to us that their fundamental

intellectual capability has not eroded because they continue to communicate with a directness and facility that would astonish us if we ourselves were not so accustomed to it.

Surely, when poor students have already mastered so complex a subject as a language, it is wise to look toward social factors rather than biological factors such as brain damage or poor heredity to explain the fact that they are not doing well.

(2) All psychological points of view on behavior conceive of the person as an active agent. Some such points of view stress organismic factors which limit abilities. Others stress "deep" motivations, developed in the early years, of which the person is unaware. The social-psychological view used here differs from the last two in that it assumes that man acts on the basis of the way he conceptualizes his environment, himself, and his future alternatives. Among his alternatives he may select some; these become goals. When he works toward achieving a goal, his conceptions of himself and his environment direct the ways he goes about it. His style or level of behavior, then, is to be explained largely in terms of things he hopes will come to be rather than in the terms either of variations in native ability or of motivations developed long ago.

This does not mean that individual differences in personality are necessarily trivial or unimportant. It does mean that most of the ones we know about are learned. When we look for factors influencing the process of differential education achievement, we shall be especially concerned with those that may vary the alternatives a young person can see as possibilities. We shall also be concerned with factors which make him conceive of himself as unable to learn, and to factors which make him think good schoolwork is meaningless.

(3) Most psychological factors in educational achievement are learned, directly or indirectly, in the person's contacts with other people. Teachers', parents', and friends' responses to the young person's attempts to interact play a major part in determining his view of himself. If they let him know they think he is stupid, he learns to think he is stupid. If they let him know they think that he is bright, he learns to think he is bright. If those around the young person have and share with him a rich knowledge of the world, he too will ordinarily develop a rich knowledge of the world. This will provide him with many goal alternatives from which to choose, and a wealth of information to make his choices rational. On the other hand, if those around the young person do not have or do not share with him a very adequate knowledge of the world, his alternatives will be few and the information on which to base his attempts to enact them will be inadequate.

It should be stressed that a social psychological point of view is somewhat different from the individualistic position, to which we have referred, that seems to dominate much of contemporary educational psychology. One variety of the individualistic

position, in the extreme, holds that the performance of students depends largely on *inherited abilities*. In turn these abilities are thought to be due primarily to genetic defects in his parents. Another variety holds that *behavior orientations*—ability for one—are developed in early life and are not particularly changeable. These individualistic positions hold, in effect, that little if anything can be done about a student's poor school performance. The social-psychological position on the other hand, holds that a person's knowledge, goals, and self-conceptions determine how well he does, and that in turn these variables are almost entirely due to factors in the *social environment*. Parents, for example, influence the education of their child, not primarily through the genes, but because they may or may not stimulate him, may or may not help provide appropriate goals and self-concepts for him, may or may not provide effective help in teaching him. Other people influence him in the same way.

This is not to say that mental ability is unimportant. On the contrary, intelligence scores are correlated with performance in school at all levels. But intelligence is not a simple phenomenon. To be sure, there is evidence of genetic effects on it, but there are important, and perhaps changing, environmental influences on it as well (13, pp. 191-207; 39, pp. 584-586).

Environmental Influences

If we want to understand and to affect educational achievement we must understand the system in which the person's achievement behavior is conducted, which is the same thing as determining the variable aspects of his environment that influence his behavior as he progresses through school. We are only beginning to learn how to analyze these factors systematically. Obviously, we must have concepts for describing the environment. One main distinction we draw here is between the general environment and the effective environment.

The general environment

By the term "general environment" we mean to indicate all variables describing the amount and accuracy of information which, objectively, is readily accessible to all or most persons in a geographic area. For the topic of educational and occupational achievement, the term refers to all such information indicating what a person might do in order to be successful in school or at work. Geographically, for a given topic like success in school or at work, the bounds of such an area would be determined by discovering lines indicating major changes in most important variables describing the amount and quality of information objectively available on the topic. This has never yet been done with any precision. Nevertheless approaches have been made, though not necessarily deliberately. One of the most informative large-scale examples is provided by Cole-

man and his associates, in the study of regional differences in educational facilities (6).

Other examples, on a much smaller scale, are provided by Sewell and Armer (34) on neighborhood contexts as possible influences on college plans, and by Haller and Sewell (18) on local area and school class as possible influences on farm boys' occupational choices. To get a bit ahead of the data, large-scale general environments, such as regions of the nation, seem to have profound influences on everyone but small differential effects on particular individuals. Small-scale general environments, such as local areas or neighborhoods, are not very influential (18, 34).

EDUCATION AND THE GENERAL ENVIRONMENT—Information relevant to success in school and in the work-a-day world is objectively available to the young person from a variety of sources. Television sets are in nine-tenths of the homes of the United States, excellent roads connect practically all parts of the country, and schools serve every hamlet. Communication outlets provide the possibility that all would have equal access to the information necessary for everyone to have equal advantage. Nevertheless there are differences among sectors of the population. Schools that are far from major population centers and schools in poorer economic areas sometimes lack the facilities and the teachers to motivate and teach the students well. Nevertheless data from the Coleman report show that most such differences, except for the rural South, are no longer very great (6, pp. 36-217). Also, areas isolated from the population centers may have somewhat fewer occupational alternatives available for the young person and his family to choose among. In such areas, the connections between education and the occupational structure may not be so clear. This is doubtless partly because well-educated youth who are born and reared in the area, and are therefore known well by local people, usually take jobs elsewhere (27, p. 116). They must even leave home in order to become educated and stay away in order to find a job that can let them express their education. The outcome is that the general environment of such places is somewhat poorer in information which young people need in order to make satisfactory educational and occupational adjustments later on (15; 32; 35; 37). Almost everyone in the area is influenced in this way—the child, his parents, his teachers, his friends.

But whether or not they live in population centers, the child, his family, and his friends belong to a certain racial group and socioeconomic stratum. With a long history of poor educational facilities and ill-prepared teachers, Negroes and members of some other minority groups such as Indians, Mexicans, and Puerto Ricans, tend on the average to be poorly educated. The same is true of those from the lower socioeconomic strata. A person's interactions may be restricted to others like themselves. Because of this, their goals and beliefs regarding education are usually much like others of their group.

We have dwelt upon the general environment at length for a reason. Large-scale general environments have important effects on everyone within them because they limit or provide the information everyone has to share with everyone else. But they have little or no effect on variations among persons within such an environment. Factors in the effective environment do this. Moreover, despite much speculation about their effects, small-scale general environments have little effect on the people within them.

The effective environment

By the "effective" environment we mean those parts of the person's social environments which vary substantially from individual to individual and which account for individual differences in behavior. The elements of a person's effective environment consist of the information presented to him and emphasized as important for him by other people whose judgment he respects. These people are perhaps more precisely called "significant others" (40), although some have referred to them as "reference groups." The exact persons who perform this function vary to some degree from individual to individual and from one type of behavior to another. The evidence that parents, peers, and school personnel frequently become significant others regarding educational and occupational decision-making is available in brief summaries (5, pp. 17-18; 38). The concept of significant others has not yet received the attention needed to make it most useful for research. Nevertheless, variables based upon it, especially the individual's conception of the expectations of significant others, are among those most highly and systematically related to educational and occupational choice behavior (8; 19). There are other important aspects of the effective environment, too, such as the information a youth receives about himself from the grades his teachers give him, or the respect or disrespect accorded to him by others with whom he interacts.

Stages in Educational Achievement

The young person is constantly being evaluated by others. Students receive good marks if they do well in school according to the standard of the teachers and if they are conscious of being highly esteemed by others. Those who do poorly are punished by low marks, and are in other ways constantly reminded of their poor work. They know that in the context of school behavior they are not esteemed by others. To the child in school, a large part of the day-to-day process of educational achievement consists of being rewarded or punished for conforming to or deviating from the expectations of teachers and others.

The stages

Ignoring for the moment the learning the student really receives, there are from this perspective two

main variables describing educational achievement: getting better or poorer marks and reenrolling or "dropping out." As used here, the last variable also includes passing from one grade to another and graduating, as well as school leaving at graduation time rather than in the middle of a school year. In elementary school one cannot, in most States, leave school; attendance is compulsory. Students who get good marks are advanced. Sometimes those who do not are held back and become "over age in grade." In most States there is a special age or school year at which a youth can legally leave school. After that age students may leave at any time, and those who are not doing well frequently choose this course. Usually this occurs at the more "respectable" periods, the end of a school year or after a graduation point. The recurrence of a series of points at which legal and "respectable" school leaving may occur, forms the boundaries between what we are calling stages in the educational achievement process. These are continuing beyond the legal minimum requirement, (indexed by leaving or not leaving school in the early days of high school), continuing beyond high school (indexed by enrolling in a post-high school program of education), completing a certain number of years of college, graduating from college, and obtaining a higher degree in a university. (It should be recognized that these stages are somewhat arbitrary and should not be reified.) Marks are given at all levels and may, therefore, be used as indications of achievement during any one stage. Reenrollment or termination at the end of a stage is of course another way to measure educational achievement, as is the number of years of education completed.

Emergence of achievement variables

The concept of stages implies that new variables come into existence at different points in the young person's progress. During the first years, the basic causal variables, other than the attitude of the teachers toward the student, are evidently intelligence (learned or unlearned) and family socioeconomic status. Shortly afterward the child's conception of himself as a learner—a self-conception, in turn, learned from others—begins to exert an influence on his performance. Being over age in grade begins to exert a negative influence on the child while he is still in grade school. Perhaps as early as the later elementary grades, parents may begin to formulate and communicate to the child their expectations regarding college, which in turn influence the young person's college plans. Levels of occupational aspiration are also developing at this time. This concept, which is explained later, refers to the level of the occupational prestige hierarchy toward which the young person orients himself. At this point, college plans and levels of occupational aspiration are already correlated with grades in school (grade point average, or GPA), but they are probably dependent variables rather than independent variables at this time.

By the later years of high school, one's conceptions of his ability to learn, his college plans, and his levels of occupational aspiration are all probably functioning to some extent as independent variables, influencing grades and dropout behavior (and, later, college enrollment and years of college completed). Parental encouragement to attend college probably also begins to exert its influence at this time.

Level of occupational aspiration

Most of the variables used here, such as college plans, are almost self-explanatory. This is not true of the concept "level of occupational aspiration." As we have noted, occupations are arranged in a hierarchy of prestige. Youngsters in school learn to conceive of a certain limited range of points along this hierarchy as appropriate to them. When this happens we say the person has a level of occupational aspiration. Knowledgeable students connect college plans and the occupational aspiration. There is reason to believe that level of occupational aspiration is one of the more important variables influencing both level of educational achievement and level of occupational achievement (17, pp. 5-16 and 20-40). For example, in one sample $r = +.64$ (17, p. 115). If a youth conceives of himself as oriented toward occupations such as minister, doctor, lawyer, owner of a large business, etc., he is said to have relatively high levels of occupational aspiration. If he conceives of himself as oriented toward occupations of the level of electrician, owner of a small business, plumber, etc., he has aspirations in the lower middle range. If he conceives of himself as oriented toward jobs that do not require any particularly scarce skills, such as common laborer, assembly line worker, etc., he is said to have a relatively low level of occupational aspiration. The same is true of most of those who are "just going to get a job." They, too, have relatively low levels of occupational aspiration. A person's level of occupational aspiration is largely independent of the particular job he is considering. That is, as time goes on many young people change the particular occupation they are thinking of entering. Yet most of these changes are from one occupational choice at a certain level in the prestige hierarchy to another occupational choice at about the same level. For example, a certain professor of history grew up intending to be a lawyer; he changed his specific occupation but the prestige level is about the same. Similarly, a certain boy who wanted to be a minister eventually became a chemist; the fields of his choices are quite different, but the prestige rank is similar. Still another wanted a job as a semiskilled worker in a factory but he now drives a delivery truck; again the jobs are different but the prestige is similar.

How does level of occupational aspiration vary with age, and when does it begin to influence educational plans? One research project looked into levels

of occupational aspiration of urban children in the different grades, from the 5th to the 12th (30). It was found that 5th graders had already developed fairly consistent prestige levels of occupational aspiration. That is, on the average, all the children selected occupations that were fairly close together in prestige. A boy, for example, who was interested in a high prestige occupation was also interested in other high prestige occupations, while a boy who was interested in a low prestige occupation was also interested in other occupations at roughly the same low level. Those in later grades are still more consistent. In fact, children's levels of occupational aspiration seem to become more and more consistent at least until they finish the 12th grade. At all grade levels, children whose measured intelligence, social class status, or school marks were higher, were somewhat more consistent in levels of occupational aspiration than were students whose measured intelligence, social class status, or school marks were lower. Also, apart from consistency, the average levels of occupational aspiration of 5th and 6th graders was found to be higher than those of 8th through 10th grade students. There is a marked rise in levels of occupational aspiration among 11th and 12th graders, probably because of the loss of low-aspiring high school dropouts.

Data on the Educational Achievement Process

Some of the details of the educational achievement process will now be suggested. They are based on scattered evidence from secondary sources as well as on a certain amount of relatively systematic correlational data. The evidence, though incomplete, tends to be consistent and therefore suggests leads for research that needs to be conducted in order to determine more completely the exact nature of the educational achievement process as well as its contribution to the process of occupational achievement.

Sources of data

The correlational data, presented in table 1, are taken from a number of sources, some of which are unpublished. For a number of years a small group of researchers at the University of Wisconsin and Michigan State University have been conducting projects relating to a small number of comparable variables to the educational achievement variables relevant for various stages of the educational achievement process. These, plus closely related work of others, are presented.

Fink measured a series of variables on 355 eighth and ninth graders in Grand Rapids in 1960. Two years later, after the age at which they could legally leave school, he traced them to determine which ones were still in school and which had dropped out (11). These data also provide information on grades during late elementary and early junior high school. Haller and Miller studied 432 17-year-old boys in Lenawee County, Mich., in 1957, obtaining data on grade point averages

TABLE 1.—Zero-order correlations of sequentially ordered school achievement variables with selected social psychological variables

Social- psychological variables	Stages in the educational achievement process									
	A. Grade point average	B. High school con- tinuation	C. High school grades		D. College enrollment	E. College grades	F. Years of college completed		G. Highest level of education obtained	
	8th and 9th graders in urban Michigan, 1960	(Same as A), 1962	C ₁ Rural Michigan 17-yr.-old schoolboys, 1957	C ₂ Wis- consin high school senior farm boys, 1948	American high school graduates, 1959	Michigan State University students, 1960-62	F ₁ Rural Wisconsin junior and senior boys, 1948-55	F ₂ Wis- consin high school senior farm boys, 1957-64	Wisconsin high school seniors G ₁ Men, 1957-64 G ₂ Women, 1957-64	
1. Intelligence . . . . .	.65	.21	.49	.44	.40	.54	.31	.44	.49	.38
2. Socioeconomic status . . . . .	.22	.10	.22	.11	.32	.06	.28	.25	.44	.48
3. Parental encouragement for college . . . . .	.23	.20	.28	.29	(¹)	.17	.40	.48	.48	.50
4. Grade point average, prior period	(¹)	.26	(¹)	(¹)	.37	.58	.41	.47	.50	.33
5. Over age in level	-.30	-.35	(¹)	(¹)	(¹)	(¹)	-.12	(¹)	(¹)	(¹)
6. College plans . . . . .	.48	.21	.53	.35	.57	(¹)	.40	.43	.69	.75
7. Level of occupational aspiration . . . . .	.49	.20	.50	.27	(¹)	.16	.52	.42	.45	.29

Sources: Groups A & B, Fink (11); group C₁, Haller and Miller (17); groups C₂, F₁, F₂, G₁, and G₂, Sewell (33); group D, Nam and Cowhig (26); and group E, Diekema (8).

¹ Correlations unavailable.

(GPA) and other variables (17, pp. 115-117). Sewell and his colleagues studied all 431 junior and senior boys in school in Jefferson County, Wis., in 1948, noting their GPA's among other things (33). These same youth were followed in 1955 and the number of years they completed in college was recorded. Nam and Cowhig present data on the college enrollment of a nationwide sample of 1,170 youth who were high school graduates in 1960 (26). Diekema has analyzed GPA data on a sample of about 500 Michigan State University freshmen who enrolled in 1960 and were followed up 2 years later (8). In 1957, Little took a random one-third sample of Wisconsin high school seniors (22). Followed by Sewell and his collaborators, these data provide the number of years of college completed by Wisconsin farm boys, and the highest level of education—college and noncollege—obtained by males and females (32-35; 37).

Analysis of the educational achievement process

The interpretation now presented is based on the correlation coefficients in table 1, together with other data. All data are interpreted in the frame of reference already stated. Naturally, the value of each correlation coefficient is not exact; each is an estimate of the degree of relationship between a pair of variables.

During the first few years of school, a child goes to school because no one around him questions whether he should. His view of the world of work is certainly irrelevant to his education. He knows nothing of the connections between school and work. It is like our wearing clothes or speaking English: we do it because everyone around us does so, and everyone expects us to do so, too. When there is complete unquestioned consensus about going to school, the child simply goes.

When he begins school he has already completed the major part of his biggest learning task: he knows a language. To this point he has no conception of his learning ability; he just learns. But after he is in school he will interact with teachers, parents, and other students in situations where the focus is deliberately on learning. He will be praised when teachers and others think he is learning, and he will be blamed when they think he is not. The teacher will respond more to some children than to others. If, over a period of time, a child tends to do the things that win the approval of the teacher, he will learn that the teacher thinks he is a good student. If his grades and his conversation about school win the approval of his parents and others, he will learn that they, too, think he is a good student. Since he learns what he is from what others tell him about himself, in this case he will learn to think of himself as a capable student. On the other hand, if teachers, parents, and others think of the child as a poor student, he will think the same of himself. Note that in column A of the table there is a high correlation (+.65) of grades with intelligence.

However, although these two factors—doing well in school and thinking one is a good student—are closely related, they are not identical. It appears as if the child's performance can make him think of himself as a better student. In turn, as we shall see in the next paragraph, such a self-conception can evidently improve his learning.

Since both of these factors are important, it should be possible to change long-term educational performances by varying short-term performances and by varying self-conceptions of ability. Probably the best way to do so would be to work through significant others. This has been tried and as far as can be determined, it has been successful. Brookover and his coworkers at Michigan State University designed an experiment to change the child's conception of himself as a learner, thus expecting to improve his performance in school. They used several experimental treatments, measuring both performance in school and self-concept as a learner before and after the treatments. Under one experimental treatment, the parents of children were brought together to learn how to take responsibility for their children's schoolwork. After a number of months the children's conceptions of their ability and their grades in school had both increased significantly. No significant changes occurred in any other experimental groups (4).

By the time the child is in the eighth or ninth grade, his conception of his ability is quite well established. Also, more or less in accord with his GPA, he has begun to formulate his levels of occupational aspiration ($r = +.49$) and his college plans ($r = +.48$). His parents are already beginning to have college expectations for him ($r = +.23$), and his family's socioeconomic status is exerting its influence ($r = +.22$). Finally, presaging what is to come later if he is over age in grade, his grades tend to be low ($r = -.30$). A circular reaction—poor performance, leading to conceiving of oneself as a poor student, leading to poor performance—has been developed. But this is only part of the story. A whole series of group stereotypes and related self-conceptions have developed by then, and the child's behavior is influenced accordingly. Because pupils who do poorly in school often are held back a year or so, people tend to respond to each student who is over age as if he were unintelligent. Because, on the average, the Negro children or other minority group members do not do as well in school as do the whites, people tend to treat each such child as if he were a poor student. As we have noted, when practically everyone treats a person as if he were stupid, he usually learns to think of himself as stupid. Factors such as these mount up. Children from minority groups or the lower strata often come to be over age in grade; and the influences of this factor then compound the influence of the others.

At a certain time, often about age 16, the law in most places says that a student may quit school if he chooses. Continuation (the reverse of dropping

out) is perhaps the most immediate important effect of being over age in grade ($r = -.35$) and of low grades ($r = -.30$). And, of course, once the child has dropped out, it is almost impossible, practically speaking, to reenter. Dropping out of school is but slightly correlated with being from a lower socioeconomic stratum ($r = +.10$), and with having parents who do not expect the child to go to college ($r = +.20$). So also is a low level of occupational aspiration ($r = +.20$) and college plans ($r = +.21$), factors to which we shall return later. And the same is true, to a slight degree, of being of the Negro race (11) ($r = +.15$; data not presented in table 1). No one of these factors is itself very highly predictive of dropping out of school. It is our interpretation that all of them function in one of these ways: (1) If a youth has a certain level on some of these variables, it is a source of embarrassment for him, making him feel compelled to leave to avoid being ashamed. This is probably why race, lower class status, low grades, and especially being over age in grade are correlated with dropping out. (2) The other factors, low expectations of parents or low levels of occupational aspiration, signify that school tends to be meaningless to the youngsters who are not doing well and to their parents also. In short, some youngsters probably tend to believe they have little to gain by staying in school, and that they have much to lose—namely self-respect and the esteem of others.

As children grow older they usually begin to grasp, even if dimly, some of the connections between school and later life. Some see these connections earlier and more clearly than others. As a consequence, each tends to develop a level of occupational aspiration and a plan regarding college. If they learn well the connection between schooling and the world of work, then their educational behavior—their number of years in school and their grades—comes partially under the control of their level of occupational aspiration and their college plans, although other variables continue to function. The influence of GPA and these two variables, it should be said, are probably still circular at this time. Note that among Michigan 17-year-olds (column C of the table), GPA was correlated $+ .50$ and $+ .53$ with levels of occupational aspiration and college plans, respectively. Though lower, the correlations of the same variables for the Jefferson County sample are also worthy of consideration (level of occupational aspiration: $+ .27$; and college plans: $+ .35$). It is noteworthy that intelligence is still of importance ($r = +.49$ and $r = +.44$ for the two samples), and that parental encouragement for college is beginning to assume some relevance ($r = +.28$ and $r = +.29$). The correlation of socioeconomic status with GPA is also positive ($r = +.22$ and $r = +.11$).

The data (column D) appear to show that college plans assume, as we would expect, greater importance in influencing college enrollment of high school graduates ($r = +.57$). Also correlated with col-

lege enrollment are intelligence ($r = +.40$), high school grades ($r = +.37$), and family socioeconomic status ($r = +.32$). We interpret this to mean that in this stage, college plans have become a clear independent variable, and that the socioeconomic status may also be more influential than before. Intelligence continues to play an important role.

In the next stage, the early years of college (column G), intelligence and grades in high school are by far the most highly correlated with college grades. Evidently among these factors, academic ability is the only one influencing this particular educational achievement variable. Other variables such as college plans, level of occupational aspiration, and parental encouragement for college no longer distinguish sharply among students. They performed their function when they helped separate those who were and were not college bound.

The data in columns F_1 , F_2 , and G_1 all concern Wisconsin males who were first studied as high school juniors or seniors. (The sample in F_2 is a subsample of G_1). They include not only those who started to college but also those who did not. On the whole, they show a remarkably even pattern, in which four variables stand out as especially important: intelligence, parental encouragement for college, college plans, and level of occupational aspiration. Ordered by sample for a given variable, the respective correlation coefficients are: intelligence— $r = +.31$, $+ .44$, $+ .49$; parental encouragement— $r = +.40$, $+ .48$, $+ .48$; college plans— $r = +.40$, $+ .43$, $+ .69$; and level of occupational aspiration— $r = +.52$, $+ .42$, $+ .45$. Socioeconomic status joins these variables in importance in sample G_1 ($r = +.44$), a sample in which college plans have an especially high correlation ($r = +.69$).

Data for females (column G_2) are a little different. College plans is the highest correlate ($r = +.75$). Parental encouragement and socioeconomic status are also noteworthy ($r = +.48$ and $+ .50$), and to a lesser extent, so are the ability variables, intelligence ($r = +.38$), and high school grades ($r = +.33$). Level of occupational aspiration is of still less importance to these girls ($r = +.29$).

Levels of occupational aspiration, college plans, and parental encouragement are three variables which apparently tend to propel a youth into college and to sustain him at least at a minimal level of satisfactory performance while there. Ability and socioeconomic status seem also to be of importance in influencing a youth to attend college and sustain him while there. But once in college, as far as sheer quality of performance (grades) is concerned, the ability factors are of paramount importance (column E).

Summary

High ability and several other favorable factors yield good performance in the elementary years. If a youth becomes over age or is otherwise consistently and seriously embarrassed in school, he

will drop out as soon as he can. If he continues in high school his performance (grades) seems more to be a function of ability than any other factor studied here. During the late elementary years and during high school, new independent variables are forming: the youth's college plans and levels of occupational aspiration, and his parents' expectations for him. These later factors largely determine whether he will enter college, although staying there depends not only on them but also on ability. Doing well in college, once there, depends largely upon academic ability.

Improving Occupational and Educational Prospects for Rural People

Education for Tomorrow's Occupational Structure

As we have seen here, educational achievement appears to be the main factor influencing occupational achievement. There is no reason to believe that the trend toward upgrading the whole of the occupational structure is going to taper off. The best guess is that it will continue and that education will become even more important for occupational achievement than it is today. Obviously, the sectors of the society that are receiving the worst education will have to improve. On a gross basis, these are largely the people of the rural South and Southwest—especially the Negroes, Indians, and Mexicans—as well as the Puerto Ricans, who are mostly in the metropolitan North.

Variables for Introducing Change

There can be no doubt but that present programs to erase the obvious inequities—improving facilities such as libraries, making school attendance compulsory, upgrading teachers, providing trained counselors—should proceed more rapidly in the areas mentioned above, which are farthest behind.

But the rate of change of the whole process can very likely be stepped up if we draw upon the major interpretations presented here.

(1) We need to learn how to identify the persons who are now "significant others" in each individual's educational and occupational decision-making. At the University of Wisconsin, research is now underway to accomplish this objective. When this is done we can organize ways of utilizing these people to improve the young person's performance in school and his self-conception as a learner, and to raise levels of occupational aspiration and college plans of those who can meet the intellectual requirements.

(2) We need to find ways to reduce or eliminate the sense of shame that seems to come with being an over age student. Some older youngsters are not very intelligent, but being over age is evidently influenced by a number of factors not directly con-

nected with ability. There is reason to believe minority group members, whose performance is quite low, frequently leave because they are over age. Reducing this factor might therefore go a long way toward equalizing the educational and subsequent occupational achievement of these people.

(3) Although the correlation between apparent ability and educational achievement is high along the whole course of the achievement process, it is not nearly as high as it might be. In all probability there are, at all stages, quite a few students of high potential whose achievement levels could be raised. It might be possible to work out techniques for identifying the more promising of these and to help them improve their performance.

Organizing to Control Strategic Variables

(1) Assuming we can learn to identify "significant others," we will need to learn how to utilize them to influence the individual. If they can be provided with relevant information and can be encouraged to try to exert their influence on the youth, it might well be possible to raise the performance levels of many more people than we can by depending entirely on the traditional direct contact of teacher with student. One possibility would be for cooperation among the school personnel who know what needs to be imparted to the student, and the State extension personnel who are experts in mobilizing local groups to solve problems. This would be especially useful in rural areas.

(2) Conquering the shame of being over age in grade appears to be more difficult. Perhaps special classes geared to reasonably bright people who have fallen behind—rather than being geared to dullards—might be organized in areas with high dropout rates. Separation of these people from others might reduce the shame one feels within the school situation. Providing them with intrinsically interesting but difficult material might simultaneously increase the desire to attend school. It might also decrease the shame one feels about his special school status when he is outside of school.

(3) Improving the educational, and hence occupational, achievement of bright students whose performance is poor requires, first, that the teachers know which students these are. Probably the best way to do this would be to develop an ability-performance discrepancy score system for standard tests of ability and achievement. Appropriate agencies might then identify the "significant others" of these students, as in (1) above, and work through them to modify educational behavior.

Needed Research

The heart of this paper is the section on the educational achievement process. Unfortunately, the research we have as a basis is less than ideal. The work already done can be improved by using multivariate analysis techniques with data already available. It is hoped that this can be done soon.

Although the data presented in table 1 were taken from reasonably well-conducted projects, we shall have to raise our research sights considerably in order to obtain the most useful data. Consider these facts. With one exception each of these studies takes a sample from but one area rather than from the country as a whole. Also in every case, the part of the life span covered is short; the longest is 7 years. By now most of the variables used can be validly and reliably measured, but there are great variations in the validity and reliability of the ones presented. Next there must be other important independent variables, some of which may develop during the course of the student's time in school, which should be measured. Finally, while the developmental scheme here presented is probably useful, it is not perfect. What is needed is a more systematic specification of the educational achievement variables operating at any one stage—perhaps even breaking down to year-to-year intervals rather than, or in addition to, gross stages. At least three educational achievement variables should be measured at all levels: grades, standardized achievement test scores, and school continuation. Ideally, all these facets should be built into at least one nationwide longitudinal research project beginning with the preschool child and ending with the adult.

Even better would be a series of such projects, each a few years apart. The aim of these would be to provide a constant flow of dependable information about the changing nature of the educational and occupational achievement process. In effect, this work would help guide investment decisions regarding the educational process and the flow of qualified manpower into the various levels of the occupational structure.

Summary

Occupational achievement is the process by which persons are selected into various levels of the occupational prestige hierarchy. The main mechanisms providing the selection are to be found in educational achievement. There are large differences among racial, regional, and residential categories in educational achievement. To some extent these are due to differences in the quality of educational facilities and personnel. Especially influential are the gaps between the rural South and Southwest and racial minority groups on the one hand, and all the rest of the population on the other hand. But it is clear that most of the variability among persons is not accounted for by these factors. A set of social psychological concepts was specified and was brought into a relation with one another in a hypothetical schema of stages of the educational achievement process. The data presented were reasonably consistent with the schema. The key independent variables are ability, socioeconomic status, and the influence of others, especially certain "significant others." Certain variables developed in the earlier

process are thought to become independent variables later. One of the most important is one's conception of his ability to learn. Unfortunately, this variable was identified after all the research presented here was underway. Others are level of occupational aspiration, parental encouragement for college, and college plans. The concepts, the schema of stages, and the data lend themselves quite readily to inferences regarding ways of modifying individual patterns of educational achievement, and a few such suggestions were made. It is to be emphasized that definitive research on the educational achievement process must be conceived and executed on a much broader, deeper, and longer scale than has ever been done to date. When progress has been made on this problem these educational data might be linked, through measurements on particular persons, to occupational achievement data. An appropriate general conceptual scheme, perhaps expanding on the one presented herein, might provide a more comprehensive, yet detailed, view of the whole occupational achievement process than has yet been possible.

References

- (1) Beale, Calvin L., Hudson, John C., and Banks, Vera J. *Characteristics of the U.S. Population by Farm and Nonfarm Origin*. Agr. Econ. Rept. 66, U.S. Dept. Agr. Dec. 1964.
- (2) Blalock, Hubert M. Jr. *Causal Inferences in Nonexperimental Research*. Univ. North Carolina Press, Chapel Hill. 1964.
- (3) Borow, Henry. "Development of Occupational Motives and Roles." In *Review of Child Developmental Research*, Lois Wladis Hoffman and Martin L. Hoffman (eds.). V. 2. Russell Sage Foundation, New York. 1966. (pp. 373-422.)
- (4) Brookover, Wilbur, LePere, Jean M., Hamachek, Don E., Thomas, Shailer, and Erickson, Edsel L. *Improving Academic Achievement Through Students' Self-Concept Enhancement*. Michigan State Univ. College of Education, East Lansing. October 1965.
- (5) Burchinal, Lee G., with Haller, Archibald O., and Taves, Marvin J. *Career Choices of Rural Youth in a Changing Society*, North Central Region. Publ. 142. The Univ. Minnesota Agr. Expt. Sta. St. Paul, Minn. 1962.
- (6) Coleman, James S., et al. *Equality of Educational Opportunity*. Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 1966.
- (7) Dewhurst, J. F. *America's Needs and Resources*. Twentieth Century Fund, New York. 1955.
- (8) Diekema, Anthony J. *Level of Occupational Aspiration, Performance in College, and Facilitation: A Preliminary Test of Certain Postulates Concerning the Relationship Between Attitudes and Behavior*. Unpubl. Ph.D. dissertation. Michigan State Univ., East Lansing. 1965.
- (9) Duncan, Otis Dudley. "Path Analysis: Sociological Examples." *Amer. Jour. Sociol.* 72: 1-16. July 1966.
- (10) Duncan, Otis Dudley, and Hodge, Robert W. "Education and Occupational Mobility." *Amer. Jour. Sociol.* 68: 629-644. May 1963.
- (11) Fink, Donald D. *The Efficiency of Certain Criteria in Predicting School Dropout*. Unpubl. Ph.D. dissertation. Michigan State Univ., East Lansing. 1962.

- (12) Freedman, Ronald, and Freedman, Deborah. "Farm-reared Elements in the Nonfarm Population." *Rural Sociol.* 21: 50-61. March 1956.
- (13) Fuller, John L., and Thompson, William R. *Behavior Genetics*. John Wiley and Sons, Inc., New York. 1960.
- (14) Ginzberg, E., et al. *Occupational Choice*. Columbia Univ. Press, New York. 1951.
- (15) Haller, Archibald O. "Occupational Choices of Rural Youth." *Jour. Co-op. Exten.* (Summer 1966): 93-102.
- (16) Haller, Archibald O., and Lewis, David M. "The Hypothesis of Intersocietal Similarity in Occupational Prestige Hierarchies." *Amer. Jour. Sociol.* 72: 210-216. September 1966.
- (17) Haller, Archibald O., and Miller, I. W. *The Occupational Aspiration Scale: Theory, Structure and Correlates*. Mich. State Univ. Agr. Expt. Sta. Tech. Bul. 288. 1963.
- (18) Haller, Archibald O., and Sewell, William H. "Occupational Choices of Wisconsin Farm Boys." *Rural Sociol.* 32: 37-55. March 1967.
- (19) Herriot, Robert E. "Some Social Determinants of Educational Aspiration." *Harvard Educ. Rev.* 33: 157-177. 1963.
- (20) Hodge, R. W., Siegel, P. M., and Rossi, P. H. "Occupational Prestige in the United States, 1925-63." In *Class, Status, and Power*, Reinhard Bendix and Seymour Martin Lipset. The Free Press, New York. 1965. (pp. 322-324.)
- (21) Hodge, R. W., Treiman, Donald J., and Rossi, Peter H. "A Comparative Study of Occupational Prestige." In *Class, Status, and Power*, Reinhard Bendix and Seymour Martin Lipset. The Free Press, New York. 1966. (pp. 309-321.)
- (22) Little, J. Kenneth. *A Statewide Inquiry Into Decisions of Youth About Education Beyond High School*. School of Education, Univ. Wisconsin, Madison. 1958.
- (23) McClelland, David C. *The Achieving Society*. D. Van Nostrand Company, Inc., Princeton, N.J. 1961.
- (24) Miller, Delbert C. "Industry and the Worker." In *Man in a World at Work*, Henry Borow (ed.). Houghton Mifflin Co., Boston. 1964. (pp. 96-124.)
- (25) Miller, Herman P. *Income Distribution in the United States*. U.S. Bur. Census, U.S. Govt. Printing Office, Washington, D.C. 1966.
- (26) Nam, Charles B., and Cowhig, James D. *Factors Related to College Attendance of Farm and Nonfarm High School Graduates*. 1960 Census-ERS P-27 No. 32. Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. June 15, 1962.
- (27) Nam, Charles B., and Powers, Mary G. "Educational Status of Rural Youth." In *Rural Youth in Crisis: Facts, Myths, and Social Change*. Lee G. Burchinal (ed.). Superintendent of Documents, U.S. Govt. Printing Office, Washington D.C. 1955. (pp. 113-129.)
- (28) Nichols, Robert C. "Schools and the Disadvantaged." *Science* 154: 1312-1314. Dec. 9, 1966.
- (29) Reiss, Albert J. *Occupations and Social Status*. The Free Press, Glencoe, Ill. 1963.
- (30) Rieger, Jon H. *Crystallization Trends in the Levels of Occupational Aspirations of Elementary and Secondary Schools*. Unpubl. Master's thesis. Michigan State Univ., East Lansing. 1961.
- (31) Roe, Anne. *The Psychology of Occupations*. John Wiley and Sons, Inc., New York. 1956.
- (32) Sewell, William H. "Community of Residence and College Plans." *Amer. Sociol. Rev.* 29: 24-38. February 1964.
- (33) Sewell, William H. Unpubl. data presented here by special permission.
- (34) Sewell, William H., and Armer, J. Michael. "Neighborhood Context and College Plans." *Amer. Sociol. Rev.* 31: 159-168. Apr. 1966.
- (35) Sewell, William H., and Haller, Archibald O. "Educational Perspectives of Farm and Rural Youth." In *Rural Youth in Crisis: Facts, Myths, and Social Change*. Lee G. Burchinal (ed.). Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 1965. (pp. 149-169.)
- (36) Sewell, William H., Haller, A. O., and Portes, Alejandro. "Educational and Occupational Achievement of Wisconsin Farm Boys." Unpubl. paper presented at the meeting of the Rural Sociological Society and American Sociological Association (San Francisco, August 29, 1967).
- (37) Sewell, William H., and Orenstein, Alan M. "Community of Residence and Occupational Choice." *Amer. Jour. Sociol.* 70: 551-563. March 1965.
- (38) Slocum, Walter L. "The Influence of Reference Group Values on the Educational Aspirations of Rural High School Students." *Rural Sociol.* 32: 269-278. Sept. 1967.
- (39) Stein, Curt. *Principles of Human Genetics*. W. H. Freeman and Company, San Francisco. 1960.
- (40) Sullivan, Harry Stack. *Conceptions of Modern Psychiatry*. The William Allison White Foundation, Washington. 1945.
- (41) Super, Donald E. *The Psychology of Careers*. Harper and Brothers, New York. 1957.
- (42) Wolfbein. "Labor Trends, Manpower, and Automation." In *Man in a World of Work*. Henry Borow (ed.). Houghton Mifflin Co., Boston. 1964.
- (43) Wright, Sewall. "The Method of Path Coefficients." *Annals Mathemat. Statist.* V: 161-215. September 1934.
- (44) U.S. Departments of Agriculture and Commerce. *Farm Population of the United States: 1965*, Census-ERS P-27 No. 36. Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. Apr. 1, 1966.
- (45) U.S. Department of Commerce. *Negro Population: March 1965*. Census P-20, No. 145. Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. Dec. 27, 1965.
- (46) U.S. Department of Labor, *Manpower Report of the President*. U.S. Government Printing Office, Washington, D.C. 1965.
- (47) Zeisel, Joseph S., and Tolley, George S. "The Job Outlook for Rural Youth." In *Rural Youth in Crisis: Facts, Myths, and Social Change*. Lee G. Burchinal (ed.). Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 1965. (pp. 257-272.)