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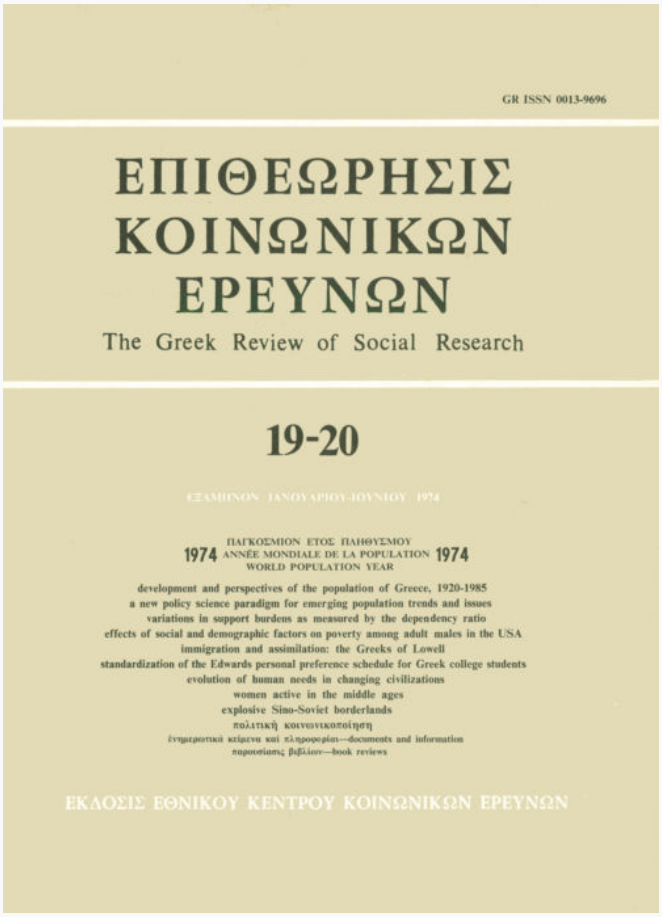

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effects of social and demographic factors on poverty among adult males in the USA

by

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Poverty has long been a major research interest of social scientists and other learned professionals. In previous studies of poverty attention has generally been concentrated on measuring the effects of social factors on individual earnings or wealth. Although demographic variables were included in many analyses, these demographic factors served only as control variables. Moreover, the definition and interpretation of poverty has varied over time. These problems result in part from the lack of an integrated perspective; a multi-disciplinary approach is needed to understand precisely the various factors of poverty and eventually to identify and specify the social etiological chain of events culminating in poverty.

The problem of inequality in affluent societies, particularly in the United States, has stimulated widespread interest in the systematic analysis of the determinants of poverty (Stigleer, 1967; Thurow, 1967). There are many ways to study this problem either quantitatively or qualitatively. The analysis of poverty may use aggregate or individual units as the basis of investigation, from diverse perspectives. The economist, for instance, tries to search for an explanation of income deficiency of the poor (Lampman, 1965; Miller, 1966; Morgan *et al.*, 1962; Orshansky, 1969; Rasmussen, 1971; Watts, 1967; Watts, 1967); the sociologist identifies role strains or status inadequacies and social deprivations of the disprivileged (Duncan, 1969; Glazer, 1965; Rossi and Blum, 1969; Rytina, Form, and Pease, 1970); the psychologist articulates feelings of alienation and deprivation of the poor (Allen, 1970; Pearl, 1970; Thomas and Carter, 1967); the anthropologist describes adaption and socialization processes of the «minority» (Gans, 1969; Gladwin, 1961; Herzog, 1966; Lewis, 1966; Valentine, 1968).

The major aim of this paper is to delineate the differential effects of social and demographic factors on poverty. A poverty model presenting a plausible causal linkage of poverty correlates is offered. An estimation method is developed to measure the propensity of being in poverty for adult males with different characteristics. Finally, this investigation attempts to relate its findings to action programs for the amelioration of poverty conditions.

rationale of the study

The relation of poverty to social, economic, demographic and environmental factors is very well documented in voluminous poverty research literature (Social Security Administration, 1970). Poverty is considered as a multi-dimensional concept with relatively measurable properties such as income adequacy, level of living, residential segregation, level of nutritional adequacy, etc. However, a universally acceptable definition of poverty is still lacking (Wilber, 1971).

There appear to be two major, popular approaches in conceptualizing poverty. The first approach uses «class» attributes, such as family income, education, occupation, and race, to measure one's relative standing in the stratification system(Miller and Roby,1969; Rein, 1969; Miller, Rein, Roby and Gross, 1967). The second approach focuses on the notion of «culture of poverty,» which implies the disengagement of the poor with respect to major social institutions (Lewis, 1966). The principle characteristics of the culture of poverty are described in terms of four systems: (1) the relationship between the subculture and the larger dominant culture; (2) the nature of the community; (3) the nature of the family; and (4) the attitudes, values, and personality of the individual.

In general, the nature of poverty can be conceptualized as prolonged economic and social deprivation (Kosa, 1969). Economic deprivation means deficiencies or lack of means of subsistence and resources, while social deprivation implies the lack of power, status, and opportunity to achieve one's plans or to actualize one's social needs. Kosa further suggests a simple typology of poverty—acute and chronic—on the basis of different kinds of deprivation. Chronic poverty is characterized by long-term, multigenerational deprivation processes, whereas acute poverty refers to deprivation following a period spent above the poverty line and is characteristic of those who are afflicted by illness or disability, of the aged, or of those remaining after a premature death of the family head. A more theoretical discussion of the types of poverty can be found in a forthcoming book written by Reissman (1973), who describes poverty as a social problem of inequality from three general perspectives, i.e., income, culture, and class.

The measurement of poverty imposes a great deal of arbitrary criteria since there is no perfect measure available for identifying the subsistence levels of living, that is, income needed for the minimum necessities of life including adequate nutrition (Rein, 1967). However, the SSA poverty index may be employed (Orshansky, 1965). This index provides a range of poverty income cutoff points which are adjusted according to family size, sex of the family head, number of children under 18 years old, and farm-nonfarm residence and are annually revised in terms of the changes in the Consumer Price Index (Bureau of the Census, 1970: 17-19).

Despite a widespread recognition of poverty as a social problem, there has been remarkably little research on the differential effects of social correlates on poverty among adult males. In this section the author selectively reviews pertinent research literature and documents evidence regarding the nature and type of the relationships among poverty correlates in the United States.

Educational Attainment and Poverty. The low levels of completed schooling and high rates of illiteracy among the poor have been observed for decades. In 1969, for families headed by males living below the poverty level,[1] the percentages of educational attainment for the elementary, high school, and college were 60, 31, and 9, respectively; for those living above poverty level the corresponding percentages were 24, 49, and 27 (Bureau of the Census, 1970). As the number of years of school completed increases, the proportionate number of persons living below poverty line decreases. This implies that increases of educational levels may decrease the likelihood of being poor.

In the analysis of data obtained from a national talent survey and a follow-up study, Daily (1964) suggests that educational achievement is essential for emergence from poverty. This seems to substantiate the observation of Morgan and his associates that education is the primary factor involved in rising above the poverty level (1962). In studying the determinants of labor market activity for the poor and nonpoor, using disaggregated data obtained from 1967 Survey of Economic Opportunity, Hill (1971) found that while educational attainment had a positive effect on the supply of nonpoor laborers, it had an insignificant effect on the black poor and a nonlinear effect on white poor heads of households. The question of whether education exerts a direct or an indirect influence on poverty, however, remains to be answered.

Educational attainment has been considered a form of investment, that may, in turn, yield a positive return in earnings (Hanoch, 1967; Hill, 1971; Riblich, 1968). This suggests that the poor are poor because of their financial deficiencies which prevent them from achieving a minimum level of education required for a job. The probability of leaving poverty for family heads having completed high school is 1.5 to 2 times

1. For detailed discussions of the SSA poverty standards, see M. Orshansky, «Counting the poor,» *Social Security Administration Bulletin* 28 : 3-29, 1965.

higher than for those without a high school degree (Kelley, 1970). Apparently educational levels, as measured conventionally by number of years of school completed but not by the quality of education, do differentiate the likelihood of being poor and non-poor. Using an income transition matrix for analyzing income distribution, Gallaway (1967) finds that the impact of educational differences is as strong as the race factor, and suggests that the improvement of educational levels of blacks can substantially reduce the problems of poverty.

Race and Poverty. The relation of poverty to race has been elucidated by many sociologists in the past decade. According to the Current Population Reports (Bureau of the Census, 1970), 30 percent of the black families in the United States in 1969 were poverty-stricken (6.7 million) while only 8 percent of the white families (12.7 million) fell below this poverty threshold.

Poverty is not unique to nonwhites or blacks but characterizes all who lack resources and power. Being nonwhite, however, often means being deprived of opportunities which lead to resources. The inequality of poverty may thus be confounded by radical inequality, which suggests that the amelioration of poverty requires the prior eradication of racial problems. This may necessitate motivating the poor nonwhites to challenge the social structural restraints, e.g., the status quo of the poor.

The issue of «legacy of poverty» or «legacy of race» has been a controversy in the poverty literature. From a scrupulous analysis of poverty factors, Duncan, (1969) concludes that racial problems are the crux of poverty problems. The issue is not poverty breeds poverty, or «inheritance of poverty,» but rather that race breeds poverty, or «inheritance of race.» Research evidence confirms this hypothesis that race exerts a significant influence upon income or earning differentials (Rasmussen, 1971).

Residence, Migration and Poverty. In 1970 36.1 percent of the US population lived in areas classified as rural, compared to 43.2 in 1960 and 56.3 in 1950. A sharply declining proportion of the rural population is engaged in farming. Only 4.8 percent of the total population was classified as rural farm in 1970, compared to 8.7 in 1960 (Bureau of the Census, 1971). These shifts may attribute to the movement of rural residents into urban centers. In 1969 the respective percentages of male family heads who lived in urban, rural nonfarm, and farm areas and were poor were 4.4, 10.3, and 17.5.

In the past decade, research has suggested that the trend of suburbanization—the outflow of high status families from cities into suburbs or rings—may be disfunctional for the inner-city population. Taeuber and Taeuber (1964) have indicated that large cities are becoming increasingly differentiated from their suburban rings in terms of socioeconomic status and levels of living. Several studies have also revealed that persons who migrate from rural to urban centers have a higher socioeconomic status than do rural non-migrants. Windham (1964) maintains that inter-urban migrants have higher socioeconomic standing than rural-to-urban migrants, and that non-migrants of both rural and urban origins are more likely to come from lower socioeconomic status than are either of the other two groups. It is, therefore, reasonable to assume that migration may help the poor to have access to more opportunities, despite the fact that they may have problems of adjusting to a new environment (Haller, 1960; Beiger, 1963; Martinson, 1955). Geographic mobility appears to benefit the mover (Morgan, David, Cohen, and Brazer, 1962).

In recent years sociologists have made many attempts to investigate factors which determine rural poverty. In a study examining the relationship between rural-to-urban migration and poverty, Price and Sikes (1971) indicate that «one of the major gaps in recent research in this area is the omission of studies dealing with the effects of heavy outmigration on rural areas and communities.» They further state that the number of black migrants from rural areas increases with increasing income. This finding may suggest that programs dealing with rural poverty should not merely focus on increasing the incomes of rural blacks, but should also change the social and community structures and revitalize their strengths and social ties. Otherwise, increases in the incomes of the rural poor might result in increased outmigration of rural blacks.

Work and Poverty. The unemployed constitute a large part of the poor in the United States. The rate of unemployment reported by the poor was more than three times that among the heads of families above the poverty line (Orshansky, 1965). In 1970 there were 18 percent of the unemployed family heads living below the poverty line, compared to 5.3 percent of the employed. Among male family heads, those who worked as professional, technical and kindred workers in 1969 had the lowest proportion (4.4%) in poverty, compared to 63.3 percent of farm laborers and foremen. Those out of work from illness or disability or who were unable to find work had 24 percent living in poverty; those who worked full time had 4 percent; and those who worked part-time had 20 percent living in poverty. However, according to the author's knowledge there is no estimation of the extent to which under-employment affects pover-

ty. Since the upper-level or highly skilled jobs are scarce in the labor market, the qualified workers need to compete with others or adopt a less rewarding and challenging position.

There is no doubt that work may have a persistent or strong influence on one's earnings. Research on labor force participation shows that the factors which keep persons from working result largely from advanced age and disability (Morgan, *et al.*, 1962). Other factors may be directly associated with work: the educational level, physical and mental conditions, and opportunities for job entry or for mobility. These work-related factors may significantly influence the individual's propensity to live in poverty.

The Disabled and Poverty. Deficiencies in earning powers and limitation of activities contribute to a high incidence of poverty among the disabled. The United States National Health Survey (1964), which conducts periodic interviews on a sample of approximately 42,000 households, estimates morbidity and disability for populations with various socioeconomic and demographic attributes. The chronic conditions which cause limitations on one's ability to work are found to be a heavier burden among the poor. Data on disabled days reveals that an average person has about 15 restricted activity days, 6 bed disability days, and 5 work-loss days per year (Walsh, 1972). The corresponding figures for persons with low family incomes (less than $3,000) are approximately 29 days of restricted activity, 11 days of bed disability, and 7 days of work-loss. Other evidence has clearly shown that there is an inverse relationship between family income and work-limitation due to the chronic conditions (Dingfelder, 1969; Namey and Wilson, 1972; Wan and Tarver, 1972).

In 1969, for male heads of families the disabled or ill had about 36.2 percent living below the poverty line. The figure was higher for nonwhites (54.7 percent) than for whites (33.1 percent).

The severity of disability may account for the differential impact of health on earning potentials. Morgan and his associates (1962) have reported that there is a strong inverse relationship between earnings (wages and salaries) and severity of disability. They have also stated that persons with more education and a professional occupation are more likely to have a greater capacity for adjusting to physical limitations and for being retrained in occupations of less physical demand than are those with less education and a manual occupation.

The Elderly and Poverty. Approximately one-tenth of the total US population is 65 years old and over. The distribution of adult males living under the poverty line forms a J-shape curve, having 10.6 percent at ages 16-21, declining to 5.0 at ages 22-44, and sharply increasing to 20.2 at ages 65 and over (Bureau of the Census, 1970). The aged poor have been described as lonely or isolated, unemployable or retired, homeless or without an owned home, little or no savings, poor health or disabled, etc.

Kreps (1965) explains the reasons for the aged's pronounced decline in labor force activity: it is not due to any deterioration in health or to the retirement benefits which may induce older men to leave their jobs; it is due rather to a secular decline in the demand for their services. Evidence also shows that the aged are relatively alienated from the mainstream of productive economic life because modernization and automation prevent or discourage them from working and competing with younger workers. This, in fact, curtails many opportunities for alleviating the institutional restraints which the older impoverished experience. The employability of the aged is, in other words, attenuated by a rigid social system, e.g., age discrimination in employment and limitations in income maintenance programs, rather than by personal deficiencies (Schottland, 1965; Sheppard, 1965).

In summary, the risk of poverty has been found to be correlated with particular, individual characteristics — being nonwhite, living in a rural area, being elderly, lacking full time employment, working on a farm, having severe disability, being a rural nonmigrant, and having less education. The risk of poverty varies with each of these factors and increases substantially as two or more factors are involved. This means that social and demographic factors may exert a synergistic effect on poverty.

methods

The data for this research come from the 1967 Survey of Economic Opportunity (SEO) carried out by the Bureau of the Census for the Office of Economic Opportunity. The SEO sample design consisted of two parts: (1) a self-weighting sample comprising approximately 18,000 households drawn by the same method and having the same geographic coverage as the Current Population Survey, and (2) a supplemental sample of roughly 12,000 households in predominantly nonwhite areas of large cities.

The expansion of the sample to the universe was accomplished by means of weights calculated on the basis of sampling frequency and independent estimates of the US population by selected attributes. Since the weighted figures provide a more accurate estimate of the characteristics under investigation, the weighted figures are presented throughout the analysis. In order to overcome the heterogeneity of the population, the study population (16,019 repre-

senting approximately 37.7 million persons) was limited to the civilian, noninstitutionalized male heads of families and other unrelated males between the ages of 25 and 64 in the United States.

To identify the effects, either direct or indirect, of social and demographic factors on poverty, a path analysis was performed. The analysis was based on a poverty model with specific causal orderings of seven explanatory variables—age, race, educational attainment, occupation, current residence, migration status, and disability. The propensity of being poor was estimated for adult males with different attributes by using a binary variable multiple regression method. The detailed discussion on this method can be found in reports presented elsewhere (Elwood, Mackenzie, and Cran, 1971; Feldstein, 1966; Morrison, 1971).

The poverty level was determined by poverty income cutoffs adjusted by family size, sex of the family head, number of children under 18 years old, and farm-nonfarm residence (Orshansky, 1965). Those who lived under or at the poverty threshold were considered to be in poverty, whereas those who lived above the threshold were classified as nonpoor. Educational attainment refers to the number of years of completed schooling. Occupations were assigned according to the longest civilian job held in 1966, using the major occupational categories of the census grouped into white-collar workers, blue-collar workers, service workers, and farm workers. Disability was defined in this study as work-limiting morbidity lasting more than 3 months. The disability classification was based upon the extent of work limitation caused by chronic conditions as reported in the SEO; the severely disabled refers to persons unable to work; the occupationally disabled refers to persons with limitations on both the kind and amount of work they can do; and persons with the secondary work limitations refers to those with limitations on either the kind or amount of work they can perform. Residence was defined according to rural-urban dichotomy.[1] Migration status was determined by the answer to the question: have you ever lived 50 miles or more from here? If the answer was yes, one was classified as migrant and, if not, as a nonmigrant.

results

Differentials in Poverty

Table 1 shows the number and percentage distributions of adult males living in poverty by race and age. The SEO data reveal that the distribution of poverty by age is U-shaped, with higher rates found in the age groups of 25-44 and 55-64. Controlling for race, this pattern still holds. The proportions of poor among nonwhites were almost 3.5 times higher than among whites, irrespective of age. It is necessary to note that the discrepancies in figures of SEO and CPS may be accounted for by the samples, responses, and response errors.

TABLE 1. *Percent and Number Distributions of Male Heads and Male Unrelated Individuals Aged 25 through 64 Living in Poverty by Race and Age, 1967* (Numbers in thousands)*

Age and Race	SEO	CPS
Total	8.1 (3055)	7.4 (2813)
25-44	7.8 (1519)	7.0 (1383)
45-54	6.7 (687)	6.0 (612)
55-64	10.7 (849)	10.2 (818)
White	6.6 (2243)	5.9 (2054)
25-44	6.3 (1104)	5.6 (1028)
45-54	5.3 (499)	4.5 (427)
55-64	8.9 (640)	8.2 (599)
Nonwhite	23.0 (812)	21.0 (759)
25-44	21.8 (415)	17.9 (355)
45-54	20.2 (189)	20.0 (185)
55-64	30.2 (219)	30.6 (219)

*Source: 1967 Survey of Economic Opportunity; US Bureau of the Census, Current Population Reports (CPS), Series P-60, No. 68, Table 4, pp. 33-38.

Table 2 presents the distribution of poverty by educational attainment, occupation, severity of disability, and migrant-residence status. The rate of poverty appears to increase drastically as educational levels decrease: the risk of poverty for persons having less than 9 years of schooling was more than 6 times as high as that of those finishing 12 years or more. The greatest difference in poverty rates was found between white-collar workers and farm workers; the respective percentages were 2.7 and 34.4. These results substantiate the findings cited earlier that farm laborers are in fact the most impoverished of all occupational groups. In terms of the extent of work limitations, it was found that the disabled had a 2 to 5 times higher incidence of poverty than did the persons with no disability. Current residence appeared to be more influential than the past residential background on the likelihood of being poor. Data in Table 2 also revealed that rural-to-rural migrants or rural nonmigrants had higher rates of poverty than other migratory groups. The rural-to-urban migrants were far better off than the rural nonmigrants or rural-to-rural migrants.

While the data in Tables 1 and 2 reveal the differences in poverty distribution by one variable at a time, they do not provide additional information for

1. Definitions and explanations of migrant status and residence background may be found in Gladys K. Bowles, A. L. Bacon, and P. N. Ritchey, «Rural-urban migrants, 1967: a comparison of the demographic, social, and economic characteristics of rural-urban migrants with other population groups,» Forthcoming. University of Georgia and Office of Economic Opportunity.

TABLE 2. *Observed Proportions of Persons Living in Poverty by Selected Social and Demographic Factors*

Social and Demographic Factors	Observed in Poverty % N(000)	Total Number (000)
Education		
<9 years	19.3 (1897)	9829
9-11 years	7.2 (508)	7055
12+ years	3.1 (646)	20823
Occupation		
White-collar workers	2.7 (403)	14943
Blue-collar workers	7.0 (1189)	16987
Service workers	11.9 (257)	2161
Farm workers	34.4 (676)	1966
NAP*	31.6 (524)	1658
Severity of Disability		
Severely Disabled	32.4 (519)	1603
Occupationally Disabled	19.1 (470)	2461
Secondary Work - Limitation	10.5 (172)	1639
Not Disabled	5.9(1875)	31774
Migrant-Residence Status**		
Rural Nonmigrant	17.4 (826)	4745
Rural - to - Rural Migrant	15.3 (553)	3617
Rural-to-Urban Migrant	7.2 (415)	5767
Urban - to - Rural Migrant	6.8 (177)	2603
Urban - to - Urban Migrant	5.4 (621)	11499
Urban Nonmigrant	4.9 (434)	8852

* NAP (not applicable) includes persons who did not report an occupation or were unemployed.

** Those who did not respond to migration question or had missing information were not included. The sum of each factor may not be equal since missing values are excluded from the analysis.

Source: 1967 Survey of Economic Opportunity.

answering the following questions: (1) Which factors are more important in determining poverty when the other factors are held constant? (2) Do the independent variables exert a joint influence on poverty? (3) What are the magnitudes of the indirect and direct effects of the specific factors on poverty? Below an attempt is made to answer these inquiries by applying a path analysis.

Path Analysis

The intercorrelations between all the variables used in this study are shown in Table 3, along with the means and standard deviations. The correlation coefficient may be considered as the total independent effect of an independent variable (exogenous variable) on a dependent variable (endogenous variable). Note that some of the correlation coefficients are very small and their impact appear to be negligible. Hence, the total effects of those variables were not partitioned into components.

In Figure 1 the values (path coefficients) along the arrows express the direct effects of exogenous variables on endogenous variables. These path coefficients, or beta weights, are standardized so that the comparison made between different variables will be meaningful (Duncan, 1964). It may be seen, for example, that education has a greater influence on poverty than does occupation since the respective coefficients are —.186 and —.039. In using path coefficients, each variable is measured on a scale whose unit is the standard deviation of that variable in the study. If a difference of one standard deviation is found on the educational scale, there is a corresponding variation of —.186 standard deviation on the poverty scale. Path coefficients less than .01 are excluded from the path diagram. The estimation of indirect paths is calculated by multiplying the coefficients attached to connecting paths (Table 4). For example, race affects poverty status via education to the extent of (—.17) (—.19) = .032; via occupation, (—.07) (—.04) = .003; via disability, (.28) (.021) = .006; via education and disability, (—.17) (—.146) (.021) = —.0005; via disability and occupation, (.28) (—.06) (—.039) = .0007. The sum of these values is considered the indirect effect of race via various paths. The joint influence of several exogenous variables on endogenous variables is the sum of the «path via»

TABLE 3. *Means, Standard Deviations, and Intercorrelations of All Variables*

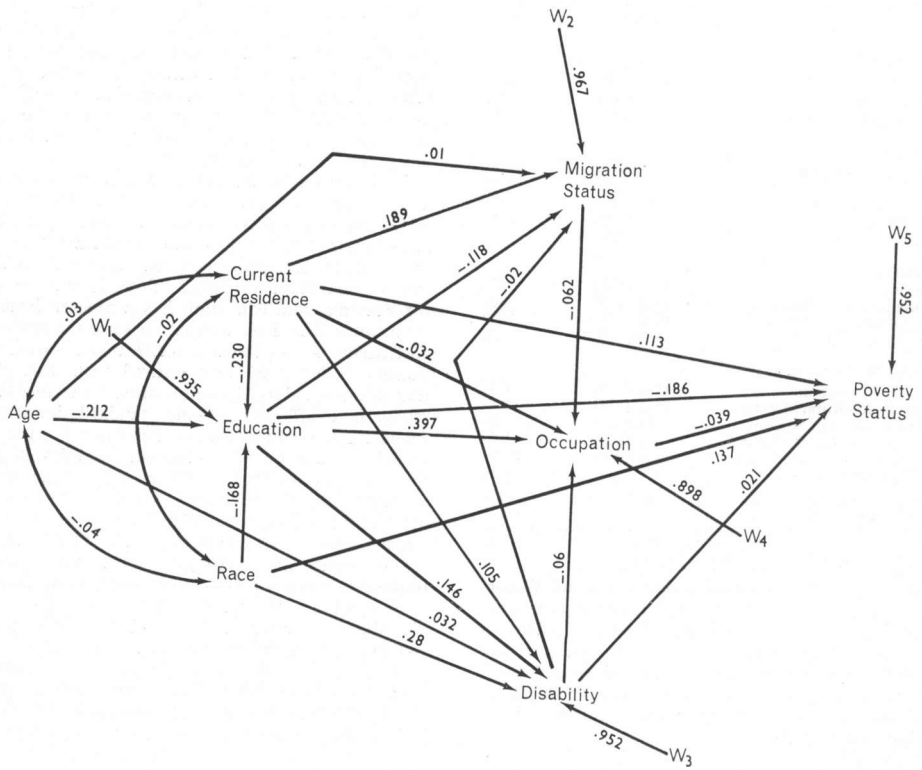
Variable	Mean	Standard Deviation	Zero-Order Correlation (2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Age	43.84	11.11	—.04	—.21	—.08	.04	.03	—.01	.03
(2) Race	.09	.30		—.16	—.15	.01	—.02	.26	.17
(3) Education	11.07	3.78			.42	—.16	—.23	.08	—.25
(4) Occupation	.40	.53				—.13	—.14	—.05	—.15
(5) Migration Status	.36	.48					.22	—.01	.03
(6) Residence	.23	.42						.07	.16
(7) Disability	.17	.26							.05
(8) Poverty Status	.08	.26							

Note: Five dummy variables are assigned values as follows:

Variable	Value (1)	Value (0)
Race	Nonwhite	White
Occupation	White-Collar Worker	Nonwhite-Collar Worker
Migration Status	Nonmigrant	Migrant
Disability	Disabled	Not Disabled
Residence	Rural	Urban
Poverty Status	Living-in-Poverty	Not Living-in-Poverty

Source: 1967 Survey of Economic Opportunity.

FIGURE 1. *Path Diagram for Poverty Model Showing Differential Effects of Social and Demographic Factors on Poverty*



subtracted from the total indirect effect (Jiobu and Marshall, 1971). The residual value is the estimate of the effect of all unmeasured factors in the endogenous variable.

Inspection of Figure 1 and Table 3 reveals that age is the weakest factor related to poverty status when other independent variables are controlled. Similarly, migration status does not exert a direct influence on poverty, but it has a small indirect effect through its relationship with occupation. Thus both age and migration factors seem to contribute to increasing poverty indirectly. Disability has a weak direct influence on poverty, and its indirect effect via occupation is almost negligible.

Education, current residence, and race, on the other hand, have relatively strong direct effects on poverty. It is important to note that education, the strongest factor related to poverty, exerts a negative effect: the higher the educational level, the lower the poverty rate. In addition to the direct effect of education on poverty, there is a small indirect effect via occupation or via disability and a relatively strong joint effect through the relationship of education with other exogenous variables. Evidence of educational influence on poverty is nothing new since we have long known that as people become more educated they tend to earn more. However, the reasons why poor people have lower educational levels have not been system-

TABLE 4. *Contributions of Social and Demographic Factors to Poverty Status*

Type of Effect				Value of Effect
Current Residence				
Total Effect				.16
Direct Effect				.113
Path Via:				
Ed	(—.23)	(—.186)		.0428
Dis	(.105)	(.021)		.0023
Occ	(—.032)	(—.039)		.0012
Dis & Occ	(.105)	(—.06)	(—.039)	.0002
Mig & Occ	(.189)	(—.062)	(—.039)	.0005
Ed & Occ	(—.23)	(.397)	(—.039)	.0036
Ed & Dis	(—.23)	(.146)	(.021)	—.0007
Ed, Dis & Occ				.0000
Ed, Dis, Mig, & Occ				.0000
Education				
Total Effect				—.25
Direct Effect				—.186
Path Via:				
Occ	(.40)	(—.04)		—.0160
Dis	(.15)	(.02)		.0030
Mig & Occ	(—.12)	(—.05)	(—.04)	—.0003
Dis & Occ	(.15)	(—.06)	(—.04)	.0004
Dis, Mig & Occ				.0000
Race				
Total Effect				.17
Direct Effect				.137
Path Via:				
Occ	(—.07)	(—.04)		.0028
Ed	(—.17)	(—.19)		.0323
Dis	(.28)	(.021)		.0059
Ed & Occ	(—.17)	(..40)	(—.04)	.0003
Ed & Dis	(—.17)	(.146)	(021)	—.0005
Dis & Occ	(.28)	(—.06)	(—.039)	.0007
Ed, Dis, & Occ				.0000
Ed, Mig & Occ				.0000

Source: 1967 Survey of Economic Opportunity.

atically explicated. One major reason might be that people with lower educational levels have limited employability and mobility so that education exerts an indirect influence through occupation on poverty. The path analysis indicates that this interpretation is questionable since occupation has a much lower direct impact on poverty than does education; occupational influences are only about one-fifth as large as educational influences.

The second most important influence on poverty is race: nonwhites are more likely to be in poverty than whites. The negative influence of race on education (—.168) is paralleled by its positive influence on disability (.28). A possible interpretation of this phenomenon is that nonwhites tend to achieve less education than whites and tend to be more afflicted by disability; consequently, they are more likely to be poor. Race, that is, appears to exert indirect influence on poverty through its relationships with education and disability.

Current residence, categorized as rural or urban, has almost the same amount of influence on poverty as does race. The path diagram shows that the residence factor also exerts a joint influence on poverty with education, occupation, migration, and disability. That is to say, rural residents tend to be nonmigrants, blue-collar or service workers, disabled, and less educated; and therefore they are more likely to be in poverty.

It is important to note that since all the variables are coded as binary (dummy) variables, the homoscedasticity assumption (i.e., the variance of each variable is not a function of the values of the other variables) of regression is violated, and the significant test done for the R^2 is not appropriate in this study (Goldberg, 1964; Lyons, 1971). The path analysis does, however, provide information regarding poverty etiologies; that is, it delineates the causal orderings of poverty correlates. All the independent variables which exert either direct or indirect effects or both on poverty are clearly portrayed. Despite the relationship between the poverty correlates shown in the path analysis, a majority of adult males who were characterized by more than one «handicapping» factor have differential risks of poverty. The path analysis does not estimate these differentials for the different subpopulations. At best this analysis only describes the relative influence of each cause or correlate on poverty. An estimation method is, therefore, developed including all the parameters from the poverty model proposed in this study.

Binary Variable Multiple Regression Analysis

In this analysis, the additive effect of social and demographic correlates of poverty is examined. All the variables are binary (Boyle, 1965; Elwood, McKenzie and Cran, 1971; Feldstein, 1965; Shah and Abbey, 1971). Each variable represents a single subclass of a factor, and is assigned a value of one if it is in the subclass, and zero if not. Each factor (e.g., education) is transformed into a number of regressor variables (e.g., medium and low educational status) equivalent to the number of subclasses minus one. The use of binary variables does not involve making any assumptions about the forms of relationship and distribution (Suits, 1957). A caution should be noted regarding the statistical nature of binary variables. It is possible to find that the estimation equation may produce predictions of the dependent variable whose values are either greater than 1 or less than 0. The reasons and remedies for this deviation have been discussed in the econometrics literature (Goldberger, 1964; Orcutt, *et al.*, 1961; Morris, 1971). In addition, the dummy variable analysis has the same problem in significance tests as

TABLE 5. *Regression Analysis of Poverty Status**

Independent Variable	Dummy Variable(a) and Subclass		Regression Coefficient	Standard Error	Beta Coefficient
Education (years)			F_1		
<9	1	X_1	.08985	.00011	.14479
9-11	2	X_2	.02685	.00011	.03837
12+	3		—(b)	—	—
Age			F_2		
25-44	1		—	—	—
45-54	2	X_3	—.03674	.00010	—.05996
55-64	3	X_4	—.05616	.00011	—.08382
Race			F_3		
Nonwhite	1	X_5	.11030	.00014	.11833
White	2		—	—	—
Employment Status			F_4		
Part-time	1	X_6	.23846	.00019	.22587
Full - time	2		—	—	—
Occupation			F_5		
White-Collar	1		—	—	—
Blue-Collar	2	X_7	.00013	.00010	.00024
Services	3	X_8	.04122	.00018	.03512
Farm	4	X_9	.21185	.00021	.17258
Unemployed	5	X_{10}	.01922	.00062	.00455
Disability			F_6		
Severely Disabled	1	X_{11}	.08451	.00023	.06552
Occupationally Dis.	2	X_{12}	.07238	.00017	.06747
Secondary Work Limitation	3	X_{13}	.02231	.00020	.01667
Not Disability	4		—	—	—
Migrant-Residence Status			F_7		
Rural Nonmigrant	1	X_{14}	.04417	.00013	.05370
Rural-to-Rural Mig.	2	X_{15}	.03606	.00014	.03892
All other	3		—	—	—

Note: (a) Dummy variable: 0 if one is not in the subclass of an associated dummy variable; 1 if one is in the subclass of an associated dummy variable.
(b) The symbol — refers to the subclass omitted in the regression equation.
(c) Intercept = .01479; R^2 = .18770; Standard Error = .24576.
*Poverty status, the dependent variable, is dichotomized: persons living at or below the poverty line are the poor (coded value = 1) and those living above the line are the nonpoor (coded value = 0).

does path analysis since it violates the homoscedasticity assumption. The detailed procedures for handling statistical tests in these cases have been presented by Cohen (1968) and Johnston (1972).

Of all the binary variables used here a set of 15 independent variables X_i were found to be predictors of poverty. The regression analysis of poverty status is summarized in Table 5. The coefficient of multiple determination (R^2) is low since individual rather than aggregate units are being analyzed. The unknown or unobservable factors are relatively large, and prevent us from determining whether or not a particular individual may be living in poverty. However, the probability of being poor can be systematically estimated by all the independent variables. A condensed equation for estimating the conditional probability of poverty is as follows:

$$\hat{Y} = .01479 + \sum_{i=1}^{7} F_i$$

The products of the predicting factors X_i and their regression coefficients B_i are F_i. The intercept (.01479) is the estimated probability of being in poverty for persons designated as having 12+ years of education, aged 25-44, being white, having no disability, being employed full-time, working in a white-collar occupation, and being either an urban migrant or an urban nonmigrant.

The results obtained from analyzing the propensity to be poor in relation to the seven predictors corroborate the findings found in the path analysis. It appears that education, race, and employment status exert the most important influences on poverty. In comparing the magnitude of beta coefficients, the order of importance was ranked for the seven predictors according to the increment that each factor contributes to the risk of being in poverty: (1) part-time employment, (2) farm workers, (3) less than 9th grade, (4) nonwhite, (5) severe disability, (6) rural nonmigrants, and (7) 25 to 44 years old. The individual who was characterized by all of

the above «handicapping» attributes has the greatest risk of being poor. The estimated poverty rate for this profile is .7940.

Two difficulties arise when binary multiple regression techniques are employed to estimate the expected values of poverty. First, the expected values of the conditional probability function fall outside the lower limit 0 for the observed values of the independent variables. Second, the problem of multicollinearity, which occurs when the independent variables are highly interrelated, deserves more attention when multi-factors are involved in the regression analysis. The remedy for the first problem lies in transforming the negative expected values into probability estimates as discussed by Orcutt (1961). Without this transformation, these expected values cannot be interpreted as probabilities of poverty. It is much more difficult to deal with multicollinearity in the case of binary regression analysis. The remedies to this problem lie in the acquisition of new information or data and sometimes involve the cancellation of one or more highly inter-correlated factors in the equation (Farrar and Glauber, 1967; Johnston, 1972). It is also worthy of noting that interaction terms of the variables were handled by combining two independent factors, e.g., migrant-residence status. However, in most cases the first order interactions were negligible and, therefore, were excluded from this analysis.

conclusions

Poverty is a multi-dimensional concept which has readily identifiable properties such as inequalities of income, class, and culture. In the present study data obtained from the Survey of Economic Opportunity were analyzed. The study population was limited to male heads of families and other unrelated males aged 25-64. Poverty status was determined by the Social Security Administration Poverty Index: those who lived at or below the poverty threshold were defined as poor while those above the threshold were considered nonpoor.

A better understanding of poverty requires research (1) to specify the causal orderings of poverty correlates and their relative influences on poverty and (2) to enumerate the individual's risk of being poor. A path analysis was performed to delineate the plausible causal orderings of seven social and demographic factors related to poverty. It was found that education, race, and current residence had the most important direct effects on poverty; age and migration status did not appear to be influential. An individual's propensity to be in poverty was estimated by binary variable multiple regression techniques. The analysis of data revealed that additive or cumulative effects of the poverty correlates seemed to be more apparent and persistent when persons were identified as having more than one handicapping attribute, such as working part-time, being a farm worker, completing less than the 9th grade, being nonwhite, having severe disability, being a rural nonmigrant, or being 25 to 44 years old. Both techniques indicated that the incidence of poverty may be clearly identified by using social and demographic factors as explanatory variables.

The evidence provided in this study implies that the payoff of poverty programs is likely to come from raising educational levels and from providing opportunities of full-time employment for nonwhites and rural residents who are poor. This research does suggest that potential reduction of poverty will not be actualized unless a planned change program dealing with both institutional, or social, and individual handicapping conditions is implemented.

Further study of poverty correlates should develop more specific causal models for analysing sub-populations since the general poverty model presented here does not adequately differentiate the plights of nonwhites and whites and of rural and urban residents. Even more important is the need to investigate further the social etiologies which not only cause but also sustain poverty. The concept of comprehensive planning may be useful for establishing social action programs to ameliorate poverty by simultaneously eliminating the structural barriers and modifying the individual's handicapping attributes.

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a. «In an oligarchy it is necessary to take great care of the poor, and to allot them public employments which are profitable.»

Aristotle, *Politics*-BK. 5. 8. 1309a 20-22

b. «No being is nourished without having also.»

Aristotle, *De Anima*-2. 4. 415b 26-27

c. «It is impossible to have wealth or anything else without taking the trouble to have it.»

Aristotle, *Nicomachean Ethics* - 4. 2. 1120b. 18-19

From the Bekker edition of Aristotle's works