# THE EDUCATIONAL AND EARLY OCCUPATIONAL STATUS ATTAINMENT PROCESS: REPLICATION AND REVISION[1]

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*The purpose of this paper is to ascertain whether a recently proposed recursive model of the educational and occupational attainment process that had been evaluated for farm boys is applicable for youth from more diverse residential backgrounds. The basic question asked in the study is how well the model fits data for young men from communities of differing size. A related aim is to present a model which adequately explains the attainment process for boys from all residential backgrounds. Using data for five community-size categories the Sewell-Haller-Portes model is extended to include three additional paths of influence. The revised model is shown to be quite adequate for the total sample as well as for all sizes of community categories. Suggestions for theory and future research are offered.*

In their influential volume, Blau and Duncan (1967) presented a recursive model of the occupational status attainment of American male adults. It is composed of two antecedent structural variables, father's education and father's occupation; two intervening behavioral variables, respondent's education and respondent's first job; and the dependent variable, respondent's occupational level in 1962. For a national sample, their model explains 26% of the variance in respondent's education, 33% of the variance in first job, and 43% of the variance in current occupational status. The addition of selected demographic variables failed to improve the effectiveness of the model. Subsequent research by Duncan, Featherman, and Duncan (1968) resulted in minor modifications. The main objective was to provide a more complete explanation of the process without necessarily increasing the proportion of explained variance in the dependent variables. This was accomplished largely by the introduction of psychological variables into the model. Elder's (1968) analysis of the Oakland Growth Study data on men who were originally studied as boys in the 1930's appears to give added weight to the supposition that psychological factors might improve our ability to explain and predict status attainment.

Sewell *et al.* (1969) have developed a more complex recursive model of the educational and occupational status attainment process. It links socioeconomic status and mental ability to educational and occupational attainment by means of intervening social psychological variables, including academic performance, the influence of significant others, and educational and occupational aspirations. The subjects were farm-reared men from Wisconsin, who were first studied as high school seniors in 1957 and were restudied in 1964. This model explains 47% of the variance in educational attainment and 33% of the variance in early occupational attainment. It provides a plausible set of intervening variables and causal linkages, accounts for early occupational status attainment about as well as other models, and appears to be more effective than others in accounting for educational status attainment. Though it is proposed as a general model of educational and occupational status attainment, its applicability for youth with more differentiated residential and socioeconomic backgrounds has not been demonstrated. Indeed, Sewell *et al.* (1969:91) call attention

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to the need for such evidence. The present paper applies the same model, with minor changes, to several subsamples of men who comprise the Wisconsin sample. A statewide sample is analyzed as a whole, as well as separately, for each of five sizes of community of residence. The farm sample is essentially the same as that used by Sewell, Haller, and Portes. Since the latter analysis was conducted, more precise measures of several variables included in the model have been prepared for use in this data set. The present analysis is thus more comprehensive in that it concerns men from a full range of community sizes and is somewhat more rigorous in that the instrumentation has been improved.

## THE MODEL

In brief, the model proposed by Sewell, Haller, and Portes assumes that predetermined social structural and psychological factors, i.e., socioeconomic status and mental ability, affect the youth's academic performance and the influence significant others have on him; that the influence of significant others and possibly his own ability affect his levels of educational and occupational aspiration; and that levels of aspiration affect educational and occupational status attainment. Thus, the model provides a causal argument linking social origins and ability with educational and early occupational status attainments by means of intervening behavioral mechanisms.

Given the causal ordering of the variables provided in the general assumptions, the hypothesized relationships between the variables in the model are now presented. Except as indicated, the rationale for the expected relationships has been presented by Sewell, Haller, and Portes. Here we will adduce evidence from various recent publications. Since these studies are based on data from several different samples, yet yield results consistent with those of the present research, they add to our confidence in the general applicability of the present model. Beginning with the independent variables, a low positive correlation is expected between the family's socioeconomic status and the youth's mental ability since such a correlation is well established and exists in the present data (Sewell and Shah, 1967), as well as in other recently analyzed data sets (Duncan, Featherman, and Duncan, 1968:80–119; Duncan, Haller, and Portes, 1968; and Elder, 1968).

Mental ability is anticipated to have a substantial direct effect on academic performance as well as an indirect effect on significant others' influence (Haller, 1968:164–165). We reason that significant others base their expectations on demonstrated abilities as they see them in academic performance rather than in less obvious indications of mental ability (Sewell *et al.*, 1969:85). Evidently because Havighurst and Neugarten (1967:84–85) think teachers show favoritism to high socioeconomic status children, they suggest that socioeconomic status has a direct influence on academic performance. Wilson (1959:842–843) finds some support for this relationship. Consequently, although Sewell *et al.* (1969:85, 88) find no support for the hypothesis, this path is retained for further analysis. We have already implied that academic performance is expected to have direct effects on significant others' influence. So should socioeconomic status: the higher a person's socioeconomic status, the higher will be the socioeconomic status of those with whom he interacts and the more likely he will be to expect from them behavior signaling higher socioeconomic status. Among others, Bordua (1960), Rehberg and Westby (1967: 370–373), and Sewell and Shah (1968b) demonstrate the positive relationship of socioeconomic status and significant others' influence.

In this context significant others' influence consists primarily of the educational and occupational status expected of a youth or exhibited to him. By definition, significant others are the persons exerting the greatest influence upon him. We therefore expect that a youth's levels of aspiration will be fairly consistent with the status levels expected of him or exhibited to him by his significant others. Several indicators of this variable have been found to be so related in the past (Bordua, 1960; Haller and Butterworth, 1960; Herriott, 1963; Alexander and Campbell, 1964; Campbell and Alexander, 1965; Boyle, 1966:14–17; Rehberg and Westby, 1967; Slocum, 1967; Sewell and Shah, 1968b; Duncan, Haller, and Portes, 1968; Warren, 1968; Kandel and Lesser, 1969). Sewell *et al.* (1969:85, 88) also find that sig-

nificant others' influence has a moderate direct effect on educational attainment; so this path is included in the model. Levels of educational and occupational aspiration should have substantial effects on educational and occupational attainment, respectively, and this has been consistently observed (Kohout and Rothney, 1964; Sewell and Shah, 1967; Kuvlesky and Bealer, 1967; Sewell and Shah, 1968a; Bohlen and Yoesting, 1968; Portes *et al.*, 1968). Educational attainment is also expected to have a strong influence on occupational attainment (Blau and Duncan, 1967:165–177; Haller, 1968:164–165; Duncan, Featherman, and Duncan, 1968:50–63; Elder, 1968).

Thus, Sewell *et al.* (1969:84–86) hypothesize eight causal paths and consider two other dubious paths as possibilities. Since their model represents an initial attempt to incorporate most of the relevant variables previously reported in the literature into a path model for a given data set, they also calculate the standardized beta coefficients for all 26 possible paths implied by the causal order specified in their model. With one exception, coefficients for the eight hypothesized paths are greater than those for which no causal prediction is made. The exception is that the beta coefficient for the dubious path from significant others' influence to educational attainment is unexpectedly greater than the one from level of occupational aspiration to occupational attainment. The other dubious path, that from socioeconomic origins to academic performance, was negligible. When all the available independent variables are entered in a multiple regression equation, 50% of the variance in educational attainment and 34% of the variance in occupational attainment are explained, but the path model explains almost the same variance in these same dependent variables—47% and 33%, respectively. The beta coefficients also suggest the possibility of viable paths from academic performance to level of educational aspiration and educational attainment. Another similar unexpected, but less substantial, beta coefficient suggests a direct link between mental ability and level of occupational aspiration.

Sewell *et al.* (1969:88–89) discuss these unexpected paths of influence in their report but do not analyze them further. They note that these potential paths suggest that the effect of ability on level of educational aspiration and attainment is not entirely mediated by significant others' influence. Perhaps this is due to another mediating factor such as self conception of one's ability which may also continue to exert a direct effect on educational attainment apart from significant others' influence or educational aspiration. In recent studies Harrison (1969) and Hauser (1969) report that performance in school appears to have a direct effect in the development of educational and occupational aspirations. Consequently, it is now anticipated that academic performance, in addition to its indirect effects through significant others' influence, will have moderate direct paths of influence on levels of educational and occupational aspiration and on educational attainment.

The model should apply to other than farm boys. It is based on widely held social psychological thinking, which seems to be supported by the accumulated results of previous studies of youth from a wide range of types of communities. Since it was not merely a set of empirical generalizations drawn from a single sample, it should be quite broadly applicable. In other words, the model is a causal explanation of educational and occupational attainment as a general process that is pervasive throughout society. It presumes that standardized achievement norms have diffused throughout the society, and that these norms are fairly uniformly applied in all communities. Of course, it is possible for a retest to show some differences because of the wider variability in the background characteristics of those from the larger communities and because improved measures have been used for some of the variables.

## METHOD

Data for this study came from an extensive questionnaire survey of all high school seniors in Wisconsin public, private, and parochial schools in 1957 (Little, 1958) and from a follow-up study conducted in 1964–65 of a one-third random sample of these students (Sewell and Shah, 1967; Sewell and Shah, 1968a). This is, of course, the same data source as was used by Sewell *et al.* (1969) and in the other research by Sewell

and associates cited throughout this paper. The 1957 survey obtained information concerning the students' educational and occupational aspirations, measured intelligence, academic record, family socioeconomic status, and similar related topics. A mail questionnaire was used in the 1964–65 follow-up study to obtain information on the educational and occupational attainments of the students after high school graduation.

The subjects in the study are the 4,388 males for whom data are available at both times (87.7% of those in the 1957 cohort sample). Their residential background is classified according to the size of the community in which they resided when they were seniors in high school, except that all students residing on farms are categorized as farm residents (Sewell, 1964; Sewell and Orenstein, 1965). Five residential categories are used to present the data: farm; village (places under 2,500); small city (2,500 to 25,000); medium city (25,000 to 100,000); and large city (100,000 and over).

Operational definitions of the variables utilized in this study are now presented and any differences from the 1969 Sewell, Haller, and Portes study are noted. *Occupational attainment* ($X_1$—OccAtt) is measured by Duncan's (1961) socioeconomic index of occupational status using data obtained in 1964–65.

*Educational attainment* ($X_2$—EdAtt) is operationalized using follow-up data by classifying the respondents into four categories assigned arbitrary weights from zero to three, respectively: no post high school education, vocational school, college attendance, and college graduation. This measure differs from the one used in the earlier study which dichotomized the respondents into those who had not attended college and those who had attended.

*Level of occupational aspiration* ($X_3$—LOA) is determined by assigning Duncan's (1961) socioeconomic index scores to the occupation that the respondent indicated in 1957 he hoped to enter in the future.

*Level of educational aspiration* ($X_4$—LEA). The respondent's 1957 plans to continue education after high school are coded arbitrarily from zero to two, as follows: not continuing, vocational school, and college. This differs from the earlier study which dichotomized the respondents according to whether they planned to enroll in a degree-granting college or university after graduating from high school.

*Significant others' influence* ($X_5$—SOI) is a weighted combination of three items reported by the youth in 1957: perceived parental encouragement to attend college, perceived teacher encouragement for college, and friends' college plans. All of these indicators concern influence of others on educational plans. The principal component method of factor analysis was utilized to determine weights for each of the three items. This index is roughly comparable to the simple summated score utilized in the earlier study since it is composed of the same three items. However, it is not identical because of differences in techniques used to obtain the weighted index and the summated score.

*Academic performance* ($X_6$—AP) is measured by the youth's centile rank in his high school class.

*Socioeconomic status* ($X_7$—SES) is a weighted combination of father's education, mother's education, father's occupation, and average annual parental income from 1957–60. The information on parents' education was provided by the student in 1957, while the information on parents' income and father's occupation was subsequently obtained from state tax returns (with proper precautions to preserve anonymity). These indicators represent the most central aspects of socioeconomic status and were combined to obtain a single index of the variable. The principal component method of factor analysis was used to determine weights for each of the items. This index differs from the one used in the earlier study since it includes (1) average annual parental income rather than items dealing with the youth's perception of the economic status of his family and (2) a more detailed categorization of his father's occupation.

*Mental ability* ($X_8$—MA) is determined by scores on the Henmon-Nelson Test of Mental Ability (1942), which is administered annually to all high school juniors in Wisconsin. Centile ranks of measured intelligence according to established statewide norms are used in the analysis.

Table 1. Zero-Order Correlations, Means, and Standard Deviations of the Eight Variables for Each Residence Category and the Total Sample*

| Variable | | Mean | Standard Deviation | $X_1$ OccAtt | $X_2$ EdAtt | $X_3$ LOA | $X_4$ LEA | $X_5$ SOI | $X_6$ AP | $X_7$ SES | $X_8$ MA | Mean | Standard Deviation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Village (N=816) | | | | | | | | | | Farm (N=857) | |
| $X_1$ | OccAtt | 36.583 | 22.943 | --- | .634 | .463 | .396 | .406 | .399 | .172 | .324 | 31.215 | 22.214 |
| $X_2$ | EdAtt | 1.087 | 1.192 | .630 | --- | .586 | .649 | .551 | .526 | .260 | .450 | 0.826 | 1.103 |
| $X_3$ | LOA | 41.502 | 25.341 | .454 | .618 | --- | .752 | .506 | .452 | .156 | .417 | 33.537 | 24.094 |
| $X_4$ | LEA | 0.745 | 0.916 | .482 | .694 | .783 | --- | .543 | .438 | .205 | .385 | 0.561 | 0.837 |
| $X_5$ | SOI | 6.760 | 1.666 | .426 | .590 | .564 | .618 | --- | .472 | .230 | .378 | 6.321 | 1.677 |
| $X_6$ | AP | 43.114 | 26.552 | .417 | .554 | .512 | .491 | .479 | --- | .100 | .630 | 44.146 | 26.509 |
| $X_7$ | SES | 14.317 | 9.851 | .264 | .341 | .313 | .352 | .362 | .259 | --- | .159 | 9.734 | 6.048 |
| $X_8$ | MA | 48.131 | 29.701 | .313 | .442 | .407 | .390 | .386 | .673 | .279 | --- | 46.061 | 29.054 |
| | | Medium City (N=935) | | | | | | | | | | Small City (N=1094) | |
| $X_1$ | OccAtt | 43.088 | 23.078 | --- | .568 | .415 | .433 | .389 | .417 | .288 | .353 | 42.462 | 23.802 |
| $X_2$ | EdAtt | 1.369 | 1.216 | .581 | --- | .629 | .721 | .615 | .572 | .458 | .492 | 1.250 | 1.222 |
| $X_3$ | LOA | 47.820 | 25.916 | .468 | .632 | --- | .770 | .543 | .497 | .340 | .451 | 47.077 | 25.586 |
| $X_4$ | LEA | 0.921 | 0.959 | .450 | .681 | .767 | --- | .624 | .504 | .390 | .429 | 0.861 | 0.947 |
| $X_5$ | SOI | 7.022 | 1.665 | .460 | .640 | .594 | .632 | --- | .490 | .383 | .475 | 6.976 | 1.752 |
| $X_6$ | AP | 43.804 | 27.022 | .372 | .548 | .473 | .442 | .505 | --- | .251 | .602 | 44.077 | 27.460 |
| $X_7$ | SES | 19.144 | 11.505 | .308 | .382 | .367 | .377 | .344 | .181 | --- | .329 | 17.790 | 11.267 |
| $X_8$ | MA | 52.477 | 28.667 | .373 | .467 | .429 | .404 | .456 | .534 | .225 | --- | 52.433 | 29.016 |
| | | Total (N=4388) | | | | | | | | | | Large City (N=686) | |
| $X_1$ | OccAtt | 40.429 | 23.710 | --- | .587 | .445 | .430 | .383 | .330 | .295 | .344 | 49.652 | 22.342 |
| $X_2$ | EdAtt | 1.226 | 1.210 | .618 | --- | .580 | .649 | .552 | .490 | .381 | .512 | 1.660 | 1.148 |
| $X_3$ | LOA | 44.666 | 26.209 | .482 | .632 | --- | .731 | .510 | .457 | .297 | .435 | 54.186 | 25.790 |
| $X_4$ | LEA | 0.833 | 0.942 | .463 | .696 | .771 | --- | .552 | .419 | .332 | .403 | 1.115 | 0.960 |
| $X_5$ | SOI | 6.866 | 1.710 | .438 | .609 | .565 | .611 | --- | .426 | .259 | .407 | 7.284 | 1.612 |
| $X_6$ | AP | 44.269 | 27.050 | .384 | .535 | .470 | .459 | .473 | --- | .172 | .501 | 46.735 | 27.528 |
| $X_7$ | SES | 16.323 | 11.088 | .331 | .417 | .366 | .380 | .359 | .194 | --- | .292 | 20.758 | 12.226 |
| $X_8$ | MA | 51.431 | 29.165 | .363 | .486 | .445 | .418 | .438 | .589 | .288 | --- | 59.042 | 27.642 |

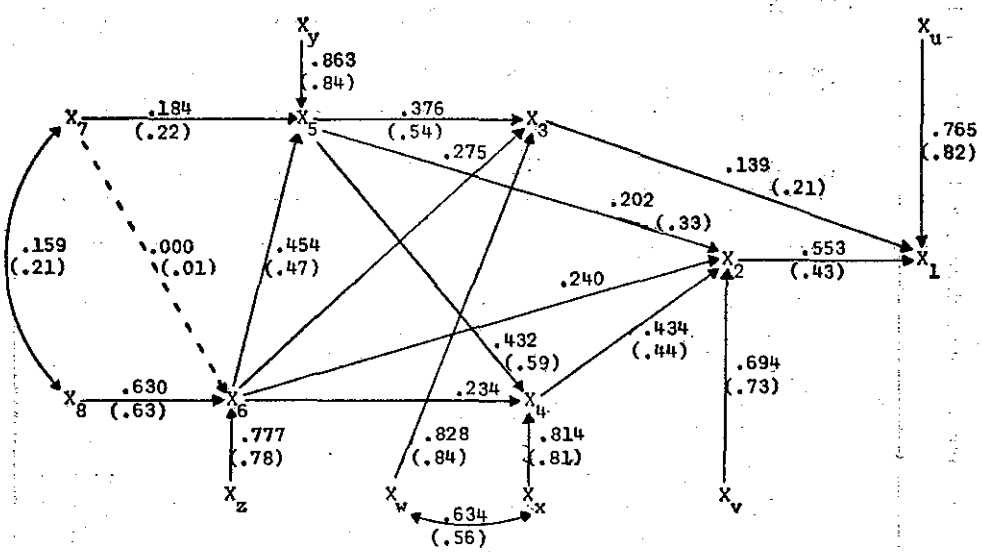
*In all the three panels coefficients above the diagonal refer to the residence category indicated at the top right-hand side of the table, and those below the diagonal refer to the residence category indicated at the top left.

## RESULTS

Zero-order correlations, means, and standard deviations of the eight variables for each residence category and the total sample are presented in Table 1. The intercorrelations show the relationship among the eight variables and provide one basis for evaluating the causal paths in the revised model presented below. It will be noted that the coefficients for any given pair of variables are quite similar in all residential categories.

The path diagram in Figure 1 shows the path coefficients for the hypothesized paths of influence in the original and the revised models, only for farm boys, using the revised measures as well as those employed in the original Sewell-Haller-Portes model. In general, values of the coefficients are approximately as hypothesized and similar to the earlier results for farm boys. Only four of the ten coefficients for paths included in both diagrams differ by as much as .10. In three instances ($P_{25}$, $P_{35}$, and $P_{45}$), the path coefficients are smaller in the revised than in the original model. These lower coefficients appear to be due to the inclusion of the additional paths in this model. The one coefficient ($P_{12}$) that is greater by more than .10 in the revised model probably differs because of the change in the measure of educational attainment. The main difference to be noted is that for the revised model, educational attainment has a greater effect on occupational attainment while level of occupational aspiration has slightly less influence on occupational attainment. Also worthy of note is the fact that the correlation between levels of educational and occupational aspiration is greater in the revised model than for the original model. Here $r_{34.56} = r_{wx} = .63$, while previously $r_{34.56} = r_{wx} = .56$. At any rate, it appears that relationships in the revised model with the new measures do not differ greatly from the earlier ones, but they do account for a larger proportion of the variance in both educational and occupational attainment. This is probably due to the fact that the new indexes provide more precise measurement and consequently reduce measurement error.

FIGURE 1. PATH COEFFICIENTS FOR ANTECEDENTS OF EDUCATIONAL AND OCCUPATIONAL ATTAINMENT WITH REVISED MODEL FOR FARM BOYS *




$X_1$ - Occupational Attainment
$X_2$ - Educational Attainment
$X_3$ - Level of Occupational Aspiration
$X_4$ - Level of Educational Aspiration
$X_5$ - Significant Others' Influence
$X_6$ - Academic Performance
$X_7$ - Socioeconomic Status
$X_8$ - Mental Ability

*Coefficients enclosed in parentheses obtained from Sewell, Haller, and Portes (1969:85)

Before presenting path coefficients for the remaining residence categories and the total sample, it seems prudent to assess empirically all possible paths in the model, given its causal sequence. The decision on which paths to be retained in the revised model can be determined either by a statistical test of significance or by an arbitrary criterion for the magnitude of their effects (Land, 1968: 34–35). The latter strategy is the one used in this study because the large size of the samples representing the various community size categories produces statistically significant beta values which have no interpretable importance. Consequently, a quite arbitrary criterion of $\beta \geqq .15$ was established for the retention of paths in the revised model. Because of the possible variations of a given beta value among subgroups, a path is retained if $\beta \geqq .15$ in the total sample and in three of the five community size subsamples.

Standardized beta coefficients for the antecedents of educational and occupational attainment for each residence category and the total sample are given in Table 2. These show many of the same relationships already noted above, but they also yield some additional insights. For farm boys, the coefficients for 12 of the 13 hypothesized paths are greater than .15 and larger than all other remaining coefficients for this residence category. The one smaller coefficient has a value of .00 and represents the dubious path from socioeconomic status to academic performance ($P_{67}$). One other fairly substantial coefficient suggests that mental ability may have a direct effect on level of occupational aspiration ($P_{38}$) as Sewell *et al.* (1969:39) also noted. In general, similar results are obtained for the other residence categories and for the total sample, but these necessitate more detailed comments.

It is obvious that socioeconomic status has little or no independent influence on academic performance in high school ($P_{67}$) since the path coefficients for each residence category and for the total sample are negligible. The dubious path from socioeconomic status to academic performance, therefore, may be eliminated from the revised model. A systematic difference, apparent for all three urban categories, suggests that mental ability has a direct effect on significant others' influence ($P_{58} \cong .22$). Although the corresponding path coefficients for the two rural categories are .10 or less, the coefficient for the total sample is .18, which is larger than some others already included in the model. Since it appears to have a noticeable effect for three of the five categories, as well as the total sample, this path is added to the revised model, keeping in mind its limited application for the rural groupings. It should also be noted that the coefficient for the path from level of occupational aspiration to occupational attainment ($P_{18}$) is low for two of the groupings (village and small city), but its value is .15 or higher for the two larger city size categories and for the total sample. Consequently, this path is retained in the revised model. The other differences appear to be inconsistent between groupings so that it is inappropriate to suggest additional modifications at this point.

Path coefficients for each residence category and the total sample are presented in Table 3 for the revised model, which includes the above addition and deletion. With a few exceptions, coefficients for the other residence categories are very similar to those for the farm boys. Only 24 of the other 65 path coefficients in the table differ more than .05 from those for farm boys and only five differ more than .10. If comparisons are made with the total sample, probably a more appropriate base for comparison, only 13 of the 65 coefficients for the various residence groupings differ more than .05 from the total sample. Eight of these are found in the two most extreme residential groupings, four each in the farm and large city categories. The largest number of discrepancies are for the paths from significant others' influence to levels of educational and occupational aspiration ($P_{35}$ and $P_{45}$) and from mental ability to academic performance ($P_{68}$). We have thus arrived at a revised and slightly extended version of Sewell, Haller, and Portes' (1969) previously published model. It appears to fit the data reasonably well for the total sample and the five residence categories. This is not to deny the fact that particular residence categories differ slightly in the degree to which they conform to it. The resulting model is illustrated using the data from the total sample (see Figure 2).

To test the adequacy of the revised model,

Table 2. Standardized Beta Coefficients and Coefficients of Determination for Hypothesized and Nonhypothesized Causal Paths for Each Residence Category and the Total Sample*

| Residence Category & Dependent Variables | Independent Variables | | | | | | | Coefficient of Determination |
|---|---|---|---|---|---|---|---|---|
| | $X_2$ EdAtt | $X_3$ LOA | $X_4$ LEA | $X_5$ SOI | $X_6$ AP | $X_7$ SES | $X_8$ MA | $R^2$ |
| **Farm** | | | | | | | | |
| $X_1$ OccAtt | .568 | .223 | -.198 | .059 | .066 | .012 | .014 | .433 |
| $X_2$ EdAtt | | .113 | .340 | .168 | .190 | .103 | .072 | .539 |
| $X_3$ LOA | | | | .352 | .178 | .031 | .167 | .333 |
| $X_4$ LEA | | | | .402 | .169 | .078 | .114 | .352 |
| $X_5$ SOI | | | | | .388 | .174 | .106 | .263 |
| $X_6$ AP | | | | | | .000 | .630 | .397 |
| **Village** | | | | | | | | |
| $X_1$ OccAtt | .515 | .067 | .003 | .039 | .084 | .037 | -.024 | .410 |
| $X_2$ EdAtt | | .078 | .395 | .172 | .195 | .053 | .044 | .569 |
| $X_3$ LOA | | | | .382 | .271 | .091 | .052 | .403 |
| $X_4$ LEA | | | | .457 | .220 | .120 | .032 | .445 |
| $X_5$ SOI | | | | | .367 | .247 | .070 | .292 |
| $X_6$ AP | | | | | | .078 | .651 | .458 |
| **Small City** | | | | | | | | |
| $X_1$ OccAtt | .446 | .075 | -.035 | .017 | .107 | .028 | .033 | .340 |
| $X_2$ EdAtt | | .075 | .385 | .154 | .196 | .157 | .050 | .628 |
| $X_3$ LOA | | | | .327 | .239 | .118 | .113 | .388 |
| $X_4$ LEA | | | | .437 | .232 | .154 | .030 | .463 |
| $X_5$ SOI | | | | | .300 | .236 | .217 | .341 |
| $X_6$ AP | | | | | | .060 | .583 | .366 |
| **Medium City** | | | | | | | | |
| $X_1$ OccAtt | .401 | .128 | -.042 | .085 | .006 | .074 | .089 | .371 |
| $X_2$ EdAtt | | .106 | .312 | .214 | .197 | .101 | .070 | .595 |
| $X_3$ LOA | | | | .389 | .184 | .174 | .114 | .430 |
| $X_4$ LEA | | | | .470 | .129 | .174 | .082 | .452 |
| $X_5$ SOI | | | | | .346 | .232 | .219 | .355 |
| $X_6$ AP | | | | | | .064 | .520 | .290 |
| **Large City** | | | | | | | | |
| $X_1$ OccAtt | .459 | .150 | -.036 | .043 | .015 | .070 | .012 | .367 |
| $X_2$ EdAtt | | .078 | .331 | .168 | .136 | .131 | .170 | .556 |
| $X_3$ LOA | | | | .319 | .220 | .131 | .157 | .370 |
| $X_4$ LEA | | | | .391 | .169 | .169 | .110 | .387 |
| $X_5$ SOI | | | | | .291 | .145 | .219 | .250 |
| $X_6$ AP | | | | | | .028 | .493 | .252 |
| **Total** | | | | | | | | |
| $X_1$ OccAtt | .480 | .150 | -.072 | .050 | .035 | .070 | .031 | .405 |
| $X_2$ EdAtt | | .100 | .350 | .177 | .172 | .128 | .080 | .598 |
| $X_3$ LOA | | | | .359 | .194 | .163 | .127 | .410 |
| $X_4$ LEA | | | | .434 | .176 | .168 | .076 | .442 |
| $X_5$ SOI | | | | | .320 | .246 | .179 | .318 |
| $X_6$ AP | | | | | | .026 | .581 | .347 |

*Underlined coefficients are for hypothesized paths.

expected correlations predicted by the fundamental theorem of path analysis were calculated and compared with the actual correlations for each pair of variables for which the system is not identified exactly. The mean deviation between predicted and actual correlations for the twelve coefficients in the system that meet this condition is .08 for the total sample. The corresponding mean deviations for each of the five residence groupings vary from .04 to .09. The largest deviation for any given pair of variables is .18. Although better fitting models can be developed for each specific residence cate-

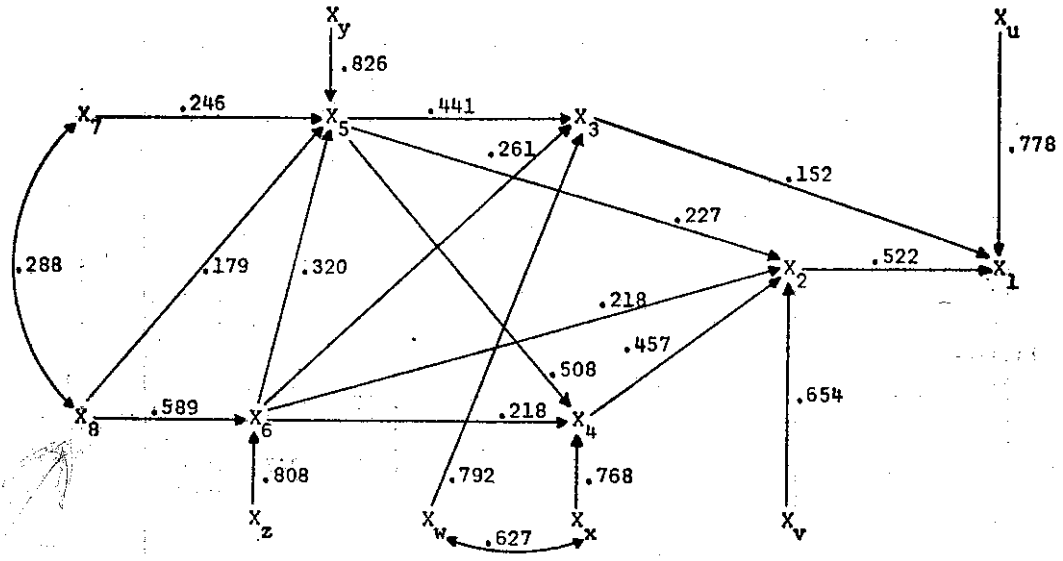
Table 3. Path Coefficients and Coefficients of Determination with Revised General Model for Each Residence Category and the Total Sample

| Residence Category and Dependent Variables | Independent Variables | | | | | | | Coefficient of Determination |
|---|---|---|---|---|---|---|---|---|
| | $X_2$ EdAtt | $X_3$ LOA | $X_4$ LEA | $X_5$ SOI | $X_6$ AP | $X_7$ SES | $X_8$ MA | $R^2$ |
| **Farm** | | | | | | | | |
| $X_1$ OccAtt | .553 | .139 | | | | | | .415 |
| $X_2$ EdAtt | | | .434 | .202 | .240 | | | .519 |
| $X_3$ LOA | | | | .376 | .275 | | | .315 |
| $X_4$ LEA | | | | .432 | .234 | | | .338 |
| $X_5$ SOI | | | | | .388 | .174 | .106 | .263 |
| $X_6$ AP | | | | | | | .630 | .397 |
| **Village** | | | | | | | | |
| $X_1$ OccAtt | .565 | .105 | | | | | | .404 |
| $X_2$ Ed Att | | | .458 | .193 | .237 | | | .563 |
| $X_3$ LOA | | | | .414 | .314 | | | .394 |
| $X_4$ LEA | | | | .497 | .253 | | | .432 |
| $X_5$ SOI | | | | | .367 | .247 | .070 | .292 |
| $X_6$ AP | | | | | | | .673 | .453 |
| **Small City** | | | | | | | | |
| $X_1$ OccAtt | .508 | .096 | | | | | | .328 |
| $X_2$ EdAtt | | | .476 | .204 | .232 | | | .602 |
| $X_3$ LOA | | | | .394 | .304 | | | .365 |
| $X_4$ LEA | | | | .497 | .260 | | | .441 |
| $X_5$ SOI | | | | | .300 | .236 | .217 | .341 |
| $X_6$ AP | | | | | | | .602 | .363 |
| **Medium City** | | | | | | | | |
| $X_1$ OccAtt | .475 | .168 | | | | | | .354 |
| $X_2$ EdAtt | | | .413 | .260 | .234 | | | .577 |
| $X_3$ LOA | | | | .476 | .232 | | | .392 |
| $X_4$ LEA | | | | .549 | .164 | | | .419 |
| $X_5$ SOI | | | | | .346 | .232 | .219 | .355 |
| $X_6$ AP | | | | | | | .534 | .286 |
| **Large City** | | | | | | | | |
| $X_1$ OccAtt | .495 | .158 | | | | | | .361 |
| $X_2$ EdAtt | | | .440 | .218 | .212 | | | .510 |
| $X_3$ LOA | | | | .386 | .292 | | | .331 |
| $X_4$ LEA | | | | .456 | .226 | | | .346 |
| $X_5$ SOI | | | | | .291 | .145 | .219 | .251 |
| $X_6$ AP | | | | | | | .501 | .251 |
| **Total** | | | | | | | | |
| $X_1$ OccAtt | .522 | .152 | | | | | | .395 |
| $X_2$ EdAtt | | | .457 | .227 | .218 | | | .572 |
| $X_3$ LOA | | | | .441 | .261 | | | .372 |
| $X_4$ LEA | | | | .508 | .218 | | | .410 |
| $X_5$ SOI | | | | | .320 | .246 | .179 | .318 |
| $X_6$ AP | | | | | | | .589 | .347 |

gory, the revised model presented here apparently explains quite adequately the educational and early occupational status attainment process for Wisconsin boys from differing residential backgrounds.

Another item of interest is how well the antecedent variables account for variance in attainment. For the total sample, the model accounts for 40% of the variance in early occupational status attainment and 57% of the variance in educational attainment. Corresponding percentages for the various residential categories vary by less than 7% from the total sample. Obviously the antecedent variables are more effective in accounting for educational attainment than for occupational attainment. In fact, educational attainment alone accounts for 38% of the variance in occupational attainment. The model is obviously an effective system for

FIGURE 2. PATH COEFFICIENTS FOR ANTECEDENTS OF EDUCATIONAL AND OCCUCATIONAL ATTAINMENT WITH REVISED MODEL FOR TOTAL SAMPLE




$X_1$ - Occupational Attainment
$X_2$ - Educational Attainment
$X_3$ - Level of Occupational Aspiration
$X_4$ - Level of Educational Aspiration
$X_5$ - Significant Others' Influence
$X_6$ - Academic Performance
$X_7$ - Socioeconomic Status
$X_8$ - Mental Ability

explaining variation in educational attainment and, since educational attainment has a strong direct influence on occupational attainment, helps to explain variance in occupational attainment. Other variables in the causal system contribute a small additional amount to the explanation of occupational attainment variance.

## DISCUSSION AND CONCLUSIONS

Blau and Duncan (1967) have posed the key question in social mobility research—whether a model can be devised to explain and predict status attainment. Their own research and that of their collaborators have gone a long way toward answering the question in the affirmative. Educational status attainment and the status level of one's first job are the most immediate variables influencing later occupational status attainment. Sewell, Haller, and Portes proposed an eight-variable model, taking early occupational status attainment and educational status attainment as the key dependent variables. Early occupational status attainment is not identical with Blau and Duncan's first job or their occupational status, but it seems fairly close to the former. So the Sewell, Haller, and Portes model cannot be fully compared with that of Blau and Duncan. This much may be said, however: Sewell, Haller, and Portes have provided a model that is quite effective in explaining and predicting educational status attainment, and educational status attainment in turn appears to have substantial impact on early occupational status attainment. The present results make this conclusion considerably more secure. This is not to suggest that the power of educational attainment has necessarily been fully assessed. The present data set does not include those who dropped out of school before the last year of high school—about 12% of the age cohort (Marshall, 1963:29)—and deals with only a limited age category. Perhaps education would be shown to be even more highly predictive of occupational status if the exact number of years of schooling successfully completed could be ascertained for the whole adult male population.

The Sewell-Haller-Portes model and the present modification of it apparently add significantly to knowledge regarding the role of variables that mediate between such predetermined variables as social class origins and measured ability and such outcome variables as educational and occupational status attainments. However, variables in the system other than educational attainment contribute only moderately to occupational attainment. This suggests that additional research is needed to find other influences on occupational status attainment. Blau and Duncan (1967) and Duncan, Featherman, and Duncan (1968) have sought such factors with little success. Perhaps factors tied to the person's marital status might help. These variables might include age at marriage, help and encouragement of one's spouse, number of dependents, and spacing of offspring. Another possible source would be personality characteristics such as need for achievement, power, and recognition and such personal relations skills as sociability and empathy. These possibilities will need to be tested on other samples because the present study does not contain information on these variables.

The broader base of the present data has made it possible to draw more certain conclusions regarding the paths proposed in the Sewell-Haller-Portes model and to propose revisions.

Sewell, Haller, and Portes noted moderate sized beta coefficients between each of two pairs of variables where insignificant betas were expected from academic performance to both educational aspiration and educational attainment ($P_{46}$ and $P_{26}$). These path coefficients are $P \geqq .20$ in all five samples and should therefore be included in the revised model. The path from academic performance to level of occupational aspiration ($P_{36}$) is also substantial in all samples, though it was not so hypothesized in the earlier analysis. Clearly, this path must be included in the model. Thus there are now four significant paths leading from academic performance, one more than from significant others' influence. Evidently academic performance has an even more central role in influencing later status attainment than had been thought originally. It has direct paths not only to significant others' influence but also to each of the subsequent intervening variables. We assume that this is not only because the youth's grades in school impress other people, who then respond by influencing his aspirations and attainments, but also because the youth normally has a fairly adequate perception of the objective requirements for status attainment and to some extent independently gauges his ability to compete by assessing his grades relative to those of others. The implication is obvious that increasing level of academic performance would be expected to have direct effects on significant others' expectations, levels of educational and occupational aspiration, and levels of educational status attainment, as well as indirect effects on educational and occupational aspirations and attainments.

Three paths, all involving significant others' influence, are reduced enough to justify special mention (change in $P \geqq .10$ based on the total sample). The effect of academic performance on significant others' influence ($P_{56}$) is less than Sewell, Haller, and Portes estimated it to be, as are the direct effects of significant others' influence on levels of occupational aspiration ($P_{35}$) and on educational attainment ($P_{25}$). Probably the expanded role of academic performance in the model accounts for all of these changes. The general implication is that significant others' influence is perhaps slightly less important than was previously reported.

A new path ($P_{58}$) from mental ability to significant others' influence has been added because it is unexpectedly too large to ignore. In the three urban samples (but not in the two rural samples) mental ability exerts an influence on significant others' influence that is independent of the youth's grades in school. This implies that the significant others of urban youth have opportunities to assess their academic potential apart from their performance in school.

Brief comment on the dubious paths suggested in the earlier article also is in order. First, the present analysis confirms the irrelevance of the supposed path from socioeconomic status to academic performance ($P_{67}$). Our results give no support for the Havighurst-Neugarten (1967) argument that teachers assign grades in accord with the socioeconomic status of parents in any of the

community size categories. Second, the unexpectedly large direct path coefficient from significant others' influence to educational attainment ($P_{25}$), noted by Sewell, Haller, and Portes, receives confirmation, appearing in all five community size subsamples.

The present analysis was more successful than that of Sewell, Haller, and Portes in accounting for variance in both key dependent variables. Most of this effect is probably due to the use of an expanded measure of educational attainment, which has increased the occupational attainment variance explained and has allowed for increased correlations between educational attainment and all of the antecedent variables.

The main conclusion of the present research is that with the minor modifications noted above, the Sewell-Haller-Portes model of the educational and early occupational status attainment process has been found to be appropriate for young men from a variety of urban and rural residential backgrounds. The model's adequacy for very large cities needs to be established. The largest city in our sample is Milwaukee (twelfth largest in the United States), and although we doubt that the results would be greatly different for such great metropolises as Chicago, Los Angeles, and New York, this must remain an empirical question. Its applicability to other age groups and in other societies also remains to be demonstrated. These points have been discussed in Sewell *et al.* (1969: 89–91) and need not be elaborated here.

Perhaps the most important single finding in the latter report is the critical role of significant others' influence in the status attainment process. The present report confirms this but adds that academic performance has effects on aspirational and attainment variables that are not mediated by significant others' influence. We take this to mean that the individual is not wholly dependent upon his significant others (as identified herein) for guidance in the status aspects of his career decisions.

The need to further examine the educational and occupational status attainment process of women has been neglected in this and in most previous research. It may well be that in contemporary Euro-American culture the occupational status attainment process of women is more complex than that of men. It is, of course, more contingent on marriage, child bearing, and child rearing but also, more often than for men, is greatly affected by family life cycle, family dissolution, and job discrimination. However, the fact is that the educational attainment process of males and females is quite similar — although social origins (Sewell and Shah, 1967) and marriage plans (Bayer, 1969) may have a greater effect on girls than on boys. This would suggest that a recursive model for the educational attainment of women might not differ greatly from that for men but that it might be necessary to include marital and family structure components to more fully account for the occupational status attainment of women.

Finally, one point not discussed by Sewell, Haller, and Portes concerns the reliability and validity of indicators used in the model. By present sociological standards we believe our measurement and coding procedures to be unusually thorough and precise. Further, we have attempted to improve some of the indexes by obtaining new data (family income was substituted for perception of economic status items) and by using factor-weighted indexes (for socioeconomic status and significant others' influence). Still, measurement errors may affect the coefficients in the revised model (Blalock, 1969). For example, we have chosen to leave the correlation between educational and occupational aspirations partially uninterpreted (see ($r_{xw}$ in Figure 1 and Figure 2). Our primary interest in accounting for the effects of socioeconomic background and ability on educational and occupational achievements makes that correlation of secondary importance, and we have been content to assume it could be explained by an alternative specification of the relation between educational and occupational aspirations or by the introduction of other variables intervening between background and aspirations. Alternatively, the failure of the model to account fully for the correlation between educational and occupational aspirations may be interpreted as a consequence of measurement error. New methods for estimating unreliability and invalidity are being developed for use with this data set, and they may permit improved estimates of the parameters of the present

model (Hauser, 1970; Hauser and Goldberger, 1970).

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