Economics of Education Review, Vol. 7, No. 1, pp. 65–76, 1988.
Printed in Great Britain.

0272-7757/88 $3.00 + 0.00
Pergamon Press plc

Attendance at Higher-Cost Colleges: Ascribed, Socioeconomic, and Academic Influences on Student Enrollment Patterns

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Abstract — Socioeconomic and ascriptive factors clearly influence high school students' academic performance, which in turn influences students' eventual college choices. A critical policy issue involves whether or not socioeconomic and ascriptive factors also have influences on college choices that are independent of their influences on academic performance. The present analysis addresses this issue, focusing upon the costliness of the colleges attended by a recent national sample of high school graduates. The structural equation results suggest that SES and ascriptive factors do have independent effects, but they are relatively minor and more "social" than "economic" in nature.

SINCE THE early 1970s, federal and state student financial aid programs have focused upon the removal of financial barriers to students' postsecondary education "access", "choice", and "persistence" (Fife, 1975). In recent years, the role of aid programs in removing barriers to access (whether or not a prospective student attends any postsecondary institution) has been the primary focus of attention among educational policy makers and researchers. Among the respected analysts dealing with this issue have been Hansen (1982), Breneman (1982), Gladieux (1983), and Heyns and O'Meara (1982). The issues of choice (which institutions college-bound students attend) and persistence (whether or not the student attends for the full length of his or her educational program) have been less debated in recent years, but perhaps are no less important.

Postsecondary choice, in particular, seems an especially important topic. Shrinking cohorts of high school graduates and tightening financial conditions at many colleges have contributed to an "opening-up" of the U.S. postsecondary education system in recent years. It is now possible for virtually any high school graduate to enter an institution somewhere in the system: community colleges and vocational-technical institutions impose relatively small financial burdens, erect few academic barriers to admission, encourage part-time attendance, and are within a short commute for the great majority of U.S. high school graduates (Karabel, 1972; Stadtman, 1980; Clark, 1985). As a result, approximately two-thirds of all high school graduates enter a postsecondary institution within two years of high school graduation, and as many as 80% may enter at some point in their lives (Hearn, 1987). As financial and academic barriers to access have eroded, so too has the significance of studies of access, as it has been traditionally defined.

The widening access to the U.S. higher education system does not alone argue for greater attention to barriers to choice, however. What makes choice especially important is the fact that not all institutions have become more open, and those that are least open (i.e. most expensive and selective) may be those most significant for true equality of opportunity in the society. There is evidence that the specific school one attends can play a significant role in income and occupational attainments in later life (e.g. see Weisbrod and Karpoff, 1968; Solmon, 1975). Some analysts have argued that, as barriers to postsecondary education access erode in the U.S., distinctions in status and allocation potentials among postsecondary institutions may come to play an increasingly significant role in attainments (e.g.

see Karabel, 1972). Because there is a continuing moderate correlation between cost and institutional "quality", as it has been usually defined (see Solmon, 1975), the growth in the importance of institutional status and allocation differences may signify parallel growth in the importance of institutional cost differences. A failure to alleviate or offset such differences (via subsidies of some kind) may pose a barrier to disadvantaged youths' later opportunities and attainment.

Income neutrality in postsecondary choice was among the primary goals of both the 1972 amendments to the Higher Education Act of 1965 and the Middle Income Student Assistance Act [MISAA] of 1978 (Gladieux and Wolanin, 1976; Gladieux, 1983). Similar policies at the state level have been directed at the same goal (Halstead, 1974). In each of these initiatives, income-related aspects of the socioeconomic and ascriptive contexts of graduates have also been considered to be part of the equal opportunity objective, including parental education levels, family size, student gender, and student race/ethnicity (Gladieux and Wolanin, 1976).

With these policy efforts regarding postsecondary choice as background, the present paper examines the following question: "Do the background socioeconomic and ascriptive characteristics of college-bound 1980s high school graduates influence the costliness of the postsecondary institutions they attend, once the influences of the students' academic characteristics have been taken into account?" An affirmative answer to the question would suggest continuing social and economic barriers to equity in postsecondary choice, whereas a negative answer would suggest nationwide progress in alleviating such barriers, given that earlier studies of the topic found such a relationship. In the narrowest terms, the question addresses the issue of whether or not the federal and state governments have succeeded in their efforts to achieve income-neutrality in students' college choice making. In the broadest terms, the question addresses success as measured by neutrality to a variety of social and economic characteristics beyond parental income.

THEORETICAL MODEL

The theoretical model assessed here is of the following form:

$$C = f(As, S, Ac)$$

where:

C = cost (tuition and fees) of the postsecondary institution attended;
As = ascribed characteristics of the student (race/ethnicity, gender);
S = socioeconomic characteristics of the student's family (parental education, family size, family income);
Ac = student's academic characteristics (tested ability, academic achievement, curricular track, educational expectations).

The model is multivariate, since in a system striving toward meritocracy, it would be inappropriate to assume student aid policy makers' goals have been to totally erase raw bivariate relationships between socioeconomic characteristics and college costs. Selective admission procedures are an accepted fact of life in American postsecondary education, and colleges with more selective admission criteria tend to be those with higher costs (American Council on Education, 1978). Since higher socioeconomic status [SES] is associated with higher ability and academic achievement among high school graduates (Falsey and Heyns, 1984, and many others), a finding of no bivariate relationship between students' institutional costs and parental SES would be not only highly unlikely, but also not truly germane to a study of financial barriers to choice in the meritocratically-oriented U.S. context.

In a true meritocracy, one might instead expect that there would be no systematic relationship between students' background characteristics and institutional costs, once students' academic characteristics are taken into account. Indeed, the rhetoric of the past 20 years in the federal student aid movement has claimed exactly that pattern as a goal (Gladieux and Wolanin, 1976; Fife, 1975; Hartle and Wabnick, 1982; Fenske *et al.*, 1983). Before 1965, the relationship between student resources and institutional costs, even with student ability and achievement controlled, was strong: because of the absence of major pools of aid money, attendance at expensive institutions was in large part a privilege of the well-to-do (Veysey, 1965; Fenske *et al.*, 1983). Massive amounts of federal, state, and private aid dollars have been injected into the postsecondary student aid system since 1965, though (see Gillespie and Carlson, 1983). Therefore, to test the model above is to assess indirectly the performance of that system in meeting recent policy makers' ambitious

meritocratic goals for postsecondary education choice.

The model may be clarified by considering the issue of attendance at higher cost institutions in the terms of path analysis, a form of causal modeling using structural equations (Duncan, 1975; Wolfle, 1980). Recursive path analysis is analogous to, and based upon, ordinary least squares [OLS] multiple regression analysis. In both approaches, expected values of residuals are assumed to be zero, to have equal variance, to be statistically independent of each other, and to be statistically independent of the explanatory variables in the equation. The major distinction between the two approaches is the more explicit attention to theoretical relationships in path analysis. Path analysis facilitates summarizing of results relating to a theoretical causal model, but more fundamentally, it requires researchers to think in explicitly causal terms. It does so by requiring any relationships between background independent variables, intervening variables, and focal dependent variables to be stated *a priori* in the form of a path model for testing. The testing of a path model relies upon decomposing observed independent variable effects into direct and indirect components. Indirect effects indicate the extent to which intervening variables account for relationships among predetermined (background) variables and the focal dependent variables. The general logic of path analysis fits the question of attendance at higher cost colleges in that one is interested in finding out whether or not the effects of students' background socioeconomic status and ascribed characteristics are mainly direct or indirect. In particular, one is interested in the extent of *direct* SES and ascribed characteristics effects in data for college attendance, once one has controlled for their *indirect* effects on the intervening academic characteristics of students.

This logic, like that of any path model, may be best communicated graphically. In the causal model presented in Fig. 1, Type 1 paths are the direct effects of student background characteristics on institutional costs. Type 2 paths are background characteristics' effects on academic characteristics. Type 3 paths are the direct effects of academic characteristics on costs. These three path types are simplifications in that they are composites of a variety of specific, variable-to-variable paths to be considered in the actual model. For example, income effects on costs, gender effects on costs, family size effects on cost, and so forth are all Type 1

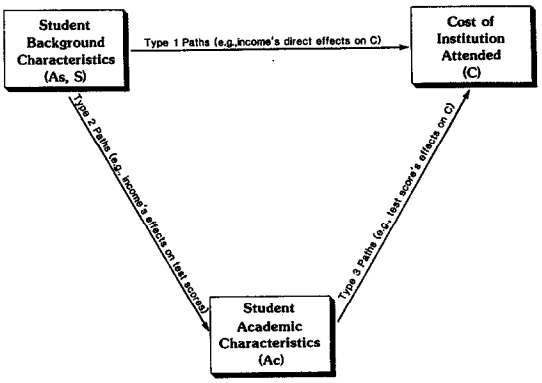

Figure 1. Influences on cost of institution attended: a causal model. See text for discussion. *As* = ascribed characteristics of the student (race/ethnicity and gender). *S* = socioeconomic characteristics of the students' family (education, income, family size). *Ac* = academic characteristics of the student (ability, achievement, curriculum track, and educational expectations). *C* = cost of institution attended.

paths. In the Figure's model, background factors, such as family income, can affect institutional costs two ways: directly (via Type 1 paths), and indirectly via their effects on academic characteristics (Type 2 paths), which in turn have effects on costs (Type 3 paths). These effects are independent of each other (i.e. background characteristics' direct effects on costs are independent of their indirect effects via academic characteristics). In a true meritocracy in college attendance, Type 1 paths would be insignificant. In other words, the only effects of socioeconomic, racial/ethnic, or gender factors would be indirect, through their respective effects on academic characteristics of high school students. Any bivariate association of background factors with college costs would disappear once background effects on academic factors are statistically controlled.[1] We shall test the path model containing Type 1 paths to assess whether such paths need to be included in appropriate specification of the matching of students and higher cost colleges. If these paths prove to be insignificant, then meritocratic trends of the 1960s and 1970s would appear to have ameliorated somewhat the historic inequities in college choice.

There is a long and important history of research on issues relating to price sensitivity among prospective and current postsecondary students (see, for

example, Hoenack, 1971; Kohn *et al.*, 1974; Radner and Miller, 1975; Jackson and Weathersby, 1975). There is some evidence that students are especially sensitive to financial factors in their institutional choice decisions, as opposed to their basic access decisions (Jackson, 1982). The research design highlighted above takes these findings on sensitivity as a starting point, and looks at the issues surrounding postsecondary enrollment choice from a more removed, "social indicator" approach. Rather than focusing directly on decisions made in the context of various known subsidies and incentives, the paper addresses the broader policy question: given that students are known to be sensitive to aid awards, tuition levels, and other financial factors in their postsecondary choices, and given that unprecedented amounts of aid funds have been injected into the system with equity goals in mind, have the amounts and kinds of aid awards offered been sufficient to change certain historical patterns of inequity in the nation's postsecondary enrollments?

RESEARCH DESIGN

Methods

Path analysis using OLS multiple regression was appropriate for the analysis, because the theoretical approach described above is multivariate and causally ordered, with a dependent variable which is continuous in form (the tuition level of institutions attended by college-attending high school graduates). As outlined in the model of Fig. 1 above, a variety of regression equations were fitted to the data. In all regressions containing ascribed racial/ethnic and gender characteristics, white males were used as the regression comparison group. The resulting standardized regression coefficients, termed path coefficients, may be interpreted as indicators of the relative magnitude of effects of variables in the model. It should be noted that issues of identification in recursive path models, such as this one, are dealt with by way of assumptions regarding the residuals (see above) and *a priori* theoretical assumptions that certain paths, such as the paths from dependent variables back to independent variables, are zero (see Hanushek and Jackson, 1977).

Direct, indirect, and total effects were computed from standardized regression coefficients. Direct effects were the effects of variables on the cost of college attended in the context of the full equation (i.e. the equation containing ascribed, SES, and academic independent variables). Total effects were the effects of variables in equations containing no causally subsequent independent variables. Because the SES and ascribed factors were parallel background variables in the causal ordering (see Fig. 1), their total effects were those obtained in equations in which only these factors were included. Because no variables followed academic factors in the causal ordering, the total effects of academic factors on cost of institution attended were the same as their direct effects. None of the possible paths in the recursive structural equation model were left out, so the indirect effects for any independent variable were calculated by subtracting its direct effects from its total effects (see Alwin and Hauser, 1975). Had any of the possible paths been trimmed from the model, we would have calculated and totalled the products of all coefficients originating at least in part from an independent variable to determine its indirect effects (see Hanushek and Jackson, 1977).

Data

The analysis employed the nationally representative High School and Beyond [HSB] data base. These data were collected by the National Opinion Research Center [NORC] for the National Center for Education Statistics [NCES], an arm of the U.S. Department of Education. The baseline HSB data contain responses from a survey of 28,000 members of the nation's high school senior classes of 1980 (see National Opinion Research Center, 1983). NCES merged these baseline survey data with 2-year follow-up data for 12,000 cases from the same sample. For the present analysis, data for the college attenders among the follow-up sample were then merged with institution-level data from the Higher Education General Information Survey [HEGIS] data base, also produced by the U.S. Department of Education (see NCES, 1983). The HEGIS data provided cost information on the postsecondary institutions of the college attenders among HSB's sample of the High School Class of 1980. The newly created data base contained 3507 cases with no missing data.

It should be noted that the present study focused only on college attenders. The sample for the analysis was constructed *post hoc* from students

fitting a traditional definition of college enrollment.[2,3] Specifically, the study focused only on students who entered, within one year of high school graduation, an institution having a federal FICE code. These respondents comprised about one half of the high school graduates of 1980 on the HSB file (see Peng, 1983, for details of the attendance patterns of students in the HSB senior sample). The FICE code is the code used by the federal government for its reporting on postsecondary institutions. Generally, postsecondary institutions having only specialized vocational programs (such as beauticians' schools, computer programming institutes, and barber colleges) do not have regular FICE codes. Most other institutions do have such codes, however. The number of institutions having FICE codes roughly approximates the 3000+ figure often used in studies of the "higher education system" (see, for example, Carnegie Council, 1980). It is smaller by about half than the institutional universe implied by the term "postsecondary education system", however.

Variables and Their Indicators

Four independent variables in the model proposed above relate to ascribed racial/ethnic and gender characteristics: Hispanic, black, Asian, and female. The indicators for these four variables are each in dummy form (0 = no, 1 = yes). Four independent variables relate to socioeconomic characteristics [SES]. The first two are father's education and mother's education. The code for each of these indicators is ordinal: 2 = less than high school graduation, 3 = high school graduation only, 4 = less than two years of vocational, trade, or business school after high school, 5 = two years or more of vocational, trade, or business school after high school, 6 = less than two years of college, 7 = two or more years of college, 8 = finished college (four or five-year degree), 9 = masters degree or equivalent, and 10 = Ph.D., M.D., or other advanced professional degree.

The third SES variable indicator is for family size: it is coded so that 0 = no siblings, 1 = one sibling, 2 = two siblings, 3 = three siblings, 4 = four siblings, and 5 = five or more siblings. The indicator is a composite of several HSB items. It is used as an SES indicator because each sibling represents a potential drain on family financial resources. The fourth and final SES variable indicator is for annual family income. This indicator was coded such that 1 = under $7000 in 1980, 2 = $7000 to $11,999, 3 = $12,000 to $15,999, 4 = $16,000 to $19,999, 5 = $20,000 to $24,999, 6 = $25,000 to $37,999, and 7 = $38,000 or more. The indicator is based in student reports made when they were seniors in high school, and is therefore imperfect. Nevertheless, these student-reported estimates have been shown to be reasonably close to verified (parent-reported) data on annual income in the HSB sample (see NORC, 1983).

There are four indicators in the model relating to the academic characteristics of the student. The indicator for tested ability is based in the standardized HSB test battery, which is normed to a national average score of 50. A student's score is the average of the student's reading, vocabulary, and mathematics scores. The indicator of high school grades is based on a self-report, where 8 = mostly As (or a numerical average of 90 to 100), 7 = about half As and half Bs (or 85 to 89), 6 = mostly Bs (or 80 to 84), 5 = about half Bs and half Cs (or 75 to 79), 4 = mostly Cs (or 70 to 74), 3 = about half Cs and half Ds (or 65 to 69), 2 = mostly Ds (or 60 to 64), and 1 = mostly below D (or below 60). The indicator for high school track is a dummy, where 1 = an academic (college preparatory) curricular track, and 2 = a vocational or general curricular track. The final indicator of students' academic characteristics relates to the students' educational expectations. This indicator is coded on a nine-point scale, where 1 = less than high school graduation, 2 = high school graduation only, 3 = less than 2 years of vocational, trade, or business school after high school, 4 = 2 years or more of vocational, trade, or business school after high school, 5 = college program — less than two years of college, 6 = college program — 2 or more years of college (including two-year degree), 7 = college program — finish college (four or five-year degree), 8 = college program — masters degree or equivalent, and 9 = college program — Ph.D., M.D., or other advanced professional degree.

The indicator for the dependent variable in the study, the cost of the institution attended, is continuous in form. The undergraduate tuition and fees rate for the nine-month 1980–1981 academic year at the school attended was drawn from the federal government's HEGIS data for that year (see NCES, 1983). This number was then divided by ten, and the result written onto the case data for each student.[4]

RESULTS

Table 1 presents the correlations, means, and standard deviations for the sample. The fact that the data are not weighted is apparent from the high proportion of Hispanic students, an artifact of HSB's special attention to that population, and from the somewhat high levels of SES and academic qualifications found in the sample. These biases are not major, and an analysis conducted with the data weighted to reflect national norms for high school graduates suggested that the use of unweighted data here had no substantive effect on the correlation and multiple regression results reported below.

The simple correlations reported in Table 1 reveal few surprises. Black and Hispanic students were disadvantaged in both SES and academic ability, relative to others. Lower SES students were disadvantaged in academic ability. Hispanic students were particularly likely (at the $P \leq 0.05$ level) to attend lower cost institutions. There were no significant relationships between the cost of the institution attended and being female, Asian, or black. Students from lower socioeconomic backgrounds were particularly likely to attend lower cost institutions. Academically strong students were particularly likely to attend higher cost institutions. These data have some policy relevance. For example, the 0.12 correlation between family income and institutional costs confirms the necessity of further assessment of financial barriers to free choice. Nevertheless, in the absence of controls for intervening relationships (e.g. between income and academic ability), the basis for this finding remains unclear.

Table 2 presents results for three regression equations. Examining these three alternative models facilitates inferences regarding the causation of attendance patterns. The Model 1 equation includes only the background variables (ascribed racial/ethnic and gender characteristics, plus the various socioeconomic characteristics) as independent variables. In a path-analytic sense, these are the exogenous, first-stage variables in the model shown in Fig. 1. The results for Model 1 show predicted effects for all four of the SES variable indicators. Higher levels of father's education, mother's education, and family income, and smaller family sizes were related significantly to attendance at higher-cost institutions. In addition, Hispanic graduates were especially unlikely to attend such institutions, in the context of controls for their socioeconomic characteristics and gender. Overall, however, the effects of background characteristics emanated largely from SES factors rather than racial/ethnic or gender characteristics.[5] The total variance explained for Model 1 was a quite modest 0.04.

Model 2, which is not part of the path analytic model and is presented only for contrast to Model 1, presents results for regressions containing only academic characteristics. Its variance explained for cost of institution attended is 0.14. Model 3 presents direct effects results for the full theoretical model. Model 3 explains 0.15 of the variance in the cost of institution attended. Each of the four academic factors has a significant influence on the outcome in Model 3, with especially strong influences coming from tested ability scores. Also significant in the final model was the indicator for black students, suggesting that these students had a particularly strong tendency to attend higher cost institutions. The final significant factor in Model 3 was mother's education. In contrast to the results for Model 1, this was the only socioeconomic factor significantly affecting the outcome in Model 3. In summary, once students' academic characteristics are statistically taken into account, the multiple regression results reveal only very limited relationships between students' background characteristics and college costs.

Examining the results for Models 2 and 3 suggests that the influences for socioeconomic and ascriptive factors revealed in Model 1 were largely mediated through academic factors. Once academic factors were added to the variables in Model 1, the direct effects for SES and ascriptive factors dropped precipitously. In other words, returning to the schema of Fig. 1, SES effects were largely transmitted indirectly, through Type 2 and 3 paths, rather than directly, through Type 1 paths. Further evidence for the mediation hypothesis comes from the variance-explained statistics. Adding background factors, such as parental education and income, to Model 2's academic-only approach added only 0.01 to variance explained. Table 3 provides a more straightforward presentation of evidence on the mediation (indirect effects) hypothesis. These data are derived from the results for Models 1 and 3 in Table 2. Path analysis was conducted for the entire model described in Fig. 1. For reasons of space and relevance to the central concerns of this paper,

Table 1. Means, standard deviations, and correlations for the focal indicators†

	1	2	3	4	5	6	7	8	9	10	11	12	13	Mean	S.D.
1. Hispanic	—													0.22	0.41
2. Black	−0.23	—												0.16	0.36
3. Asian	−0.11	−0.09	—											0.04	0.20
4. Female	−0.01	0.02	−0.01	—										0.55	0.50
5. Father's education	−0.15	−0.12	0.08	−0.07	—									4.98	2.74
6. Mother's education	−0.17	0.01	0.04	−0.01	0.55	—								4.52	2.36
7. Family size	0.05	0.09	0.01	0.01	−0.11	−0.13	—							2.67	1.48
8. Family income	−0.16	−0.15	0.01	−0.08	0.43	0.34	−0.12	—						4.53	1.72
9. Tested ability	−0.22	−0.28	0.00	−0.11	0.24	0.19	−0.13	0.23	—					53.18	8.12
10. High school grades	−0.11	−0.15	0.03	0.14	0.06	0.07	−0.03	0.05	0.49	—				6.27	1.30
11. High school track	−0.08	−0.03	0.03	−0.05	0.20	0.16	−0.10	0.15	0.40	0.28	—			0.59	0.49
12. Educational expectations	−0.05	0.05	0.08	−0.02	0.24	0.22	−0.08	0.15	0.33	0.32	0.37	—		6.95	1.63
13. Cost of institution attended/10	−0.11	−0.02	0.00	−0.03	0.15	0.16	−0.07	0.12	0.31	0.21	0.27	0.25	—	129.61	145.67

*For indicator definitions, see text. Sample n = 3507. Data are unweighted.

Table 2. Regression results for cost of institution attended*

	Model 1		Model 2		Model 3	
	Metric coefficients	Standardized coefficients	Metric coefficients	Standardized coefficients	Metric coefficients	Standardized coefficients
Hispanic	−30.98	−0.09*	—	—	−10.72	−0.03
Black	−8.02	−0.02	—	—	15.64	0.04‡
Asian	−12.76	−0.02	—	—	−10.78	−0.02
Female	−5.06	−0.02	—	—	−0.66	−0.00
Father's education	3.42	0.06†	—	—	0.79	0.01
Mother's education	5.58	0.09*	—	—	3.53	0.06†
Family size	−4.38	−0.04†	—	—	−1.75	−0.02
Family income	3.43	0.04‡	—	—	1.24	0.01
Tested ability	—	—	3.56	0.20*	3.34	0.19*
High school grades	—	—	4.33	0.04‡	5.66	0.05†
High school track	—	—	39.32	0.13*	36.92	0.12*
Educational expectations	—	—	11.08	0.12*	9.43	0.11*
Constant	94.78	—	−187.08	—	−190.52	—
R^2	0.04*		0.14*		0.15*	

*Sample n = 3507. *$P \leq 0.001$, †$P \leq 0.01$, ‡$P \leq 0.05$.

Table 3. Direct, indirect, and total effects in a two-stage path model for cost of institution attended

	Simple r	Direct effects	Indirect effects	Total effects
Hispanic	−0.11	−0.03	−0.06	−0.09*
Black	−0.02	0.04‡	−0.06	−0.02
Asian	0.00	−0.02	0.00	−0.02
Female	−0.03	−0.00	−0.02	−0.02
Father's education	0.15	0.01	0.05	0.06†
Mother's education	0.16	0.06†	0.03	0.09*
Family size	−0.07	−0.02	−0.02	−0.04†
Family income	0.12	0.01	0.03	0.04‡
Tested ability	0.31	0.19*	—	0.19*
High school grades	0.21	0.05†	—	0.05†
High school track	0.27	0.12*	—	0.12*
Educational expectations	0.25	0.11*	—	0.11*

*Sample n = 3507. *$P \leq 0.001$, †$P \leq 0.01$, ‡$P \leq 0.05$. Significance levels are not attached to indirect effects. The two-stage path model for influences on cost of institution attended has the first eight variables as exogenous (background) factors. These factors are the ascribed and socioeconomic characteristics of students. The final four variables represent the academic characteristics of students, and are hypothesized to be endogenous (i.e. influenced by the exogenous factors). Standardized regression coefficients are reported. Significance levels are from Models 1 and 3 of Table 2.

however, the path coefficients for the effects of background factors on academic factors (Type 2 paths in Fig. 1) are only summarized here.[6] The indirect effects shown in Table 3 reveal the extent and nature of the mediation in the model. The effects of the four SES factors in the sample were largely mediated through academic factors. Mother's education is somewhat of an exception to this pattern: compared to father's education, mother's education appears to have been less of an influence on academic ability, track, performance, and expectations, but more of a direct influence on final institutional destinations. The total effects of family income were minor, and were roughly split between direct and indirect effects.

The indirect effects of the ascribed characteristics, shown in Table 3, are also of interest. Black students had a slight direct advantage (direct effect of 0.04) in attendance at higher cost institutions, net of socioeconomic and academic factors. Black students,

along with Hispanic students, were nevertheless disadvantaged in the contests for academic credentials important to college entry (indirect effects of −0.06 for both groups). Blacks, therefore, had a disadvantage in indirect effects in the model, but an offsetting advantage in direct effects. The net result was an essentially zero (−0.02) total effect of being black. To put that into clearer language, blacks experienced deficits in academic credentials (such as test scores), but they also showed a clear tendency to attend higher cost institutions than other students having roughly the same socioeconomic and academic characteristics. The highlighting of direct and indirect effects in Table 3 thus reveals an intriguing pattern that would have been obscured in a single-equation analysis.

Summary

Five major conclusions may be drawn from the analysis presented above. First, socioeconomic factors played a remarkably small role in students' attendance destinations, relative to academic factors. Second, and relatedly, the role of the two more "economic" of the socioeconomic indicators in this analysis, family income and family size, was smaller than the role of the two more "social" of the SES factors, father's education and mother's education. Third, the influences of SES factors on cost of institution attended were largely indirect, in that they seem to have their total effects on the outcomes mainly by way of their influences on academic factors such as test scores and grades. Only one SES factor, mother's education, had a significant direct influence, and that influence was not major. Fourth, ascribed factors played varied roles in effects on the dependent variable. Blacks showed a tendency to enroll in higher cost institutions, all else equal, but this tendency was offset overall by their lower relative standing in academic qualifications. Hispanics were apparently more deterred than blacks by their lower academic qualifications. Fifth, the overall model was not especially successful in explaining the attendance of students at higher cost institutions. Approximately 85% of the variance in these patterns remained unexplained.[7]

IMPLICATIONS

The results suggest that, at least in the arena of postsecondary choice, some nationwide progress has been made. Tests of similar models for earlier cohorts of high school graduates have showed significant and somewhat larger relationships between college costs and college attenders' income and other socioeconomic characteristics. Of course, comparisons of regression coefficients for different samples, models, and indicators must be undertaken very cautiously, if at all, but the results here at least give some reason to believe that income neutrality in college choice making is slowly being achieved.

To say that the major direct factors in the cost of college attended are academic rather than socioeconomic does not imply that socioeconomic factors are irrelevant, however. In the larger picture, it is socioeconomic factors that set the stage for students' performance on academic tests, achievement in high school, and formation of educational expectations and aspirations (Sewell, 1971; Thomas *et al.*, 1979). To focus entirely on the transition from high school graduate to college attender is to capture only one, quite late moment in a trajectory of events in which parental SES plays a role. Many students drop out well before high school graduation, and disproportionate numbers of those dropouts are from disadvantaged backgrounds. In addition, among high school graduates, SES seems to play a role in student aid knowledge and knowledge of college costs, and thus does affect decisions regarding whether to attend college or to follow other paths (Olson and Rosenfeld, 1984a,b). In this way, the present study of college attenders alone commences at a stage well after many of SES's most deleterious efforts.

Nevertheless, the present research offers some room for hope: the socioeconomically disadvantaged who survive the great pressures on their educational careers prior to high school graduation are attending institutions costing approximately the same as those of other, more advantaged students of similar talents and accomplishments. Because much financial aid is need-based, and growing proportions of aid are in the forms of work programs and loans (Gillespie and Carlson, 1983), most of these disadvantaged students are attending with work burdens and loan burdens not experienced by others. Their attendance at the higher cost institutions in roughly equal numbers to other similar students may therefore be testament not only to student aid programs but also to the students' dedication and to the market power of higher cost institutions to attract applicants.

Naturally, such a rosy conclusion should not go unchallenged. Tuition is only one part of the costs of college. Other costs include room, board, supplies, and the opportunity costs of foregone employment chances. Offsetting these costs are financial aid offerings, varying in their form and present value. An ideal "social indicator" study of the topic of this paper might focus on these more comprehensive costs and offsets, in addition to simple tuition rates. Such a study might also have available data on actual tuition rates facing individual students, rather than data from imputed rates, since program and credit-differentiated tuition rates are becoming increasingly popular with institutions (Yanikoski and Wilson, 1984). Such a study might contain in addition better indicators of family financial resources, including not only verified (rather than student-reported) family income data but also indicators of liquid assets and net worth. Finally, a weighted sample of college attenders would also be preferable to the unweighted, albeit reasonably representative, data necessarily used here.[8] Still, it is unlikely that such improvements on the core indicators, sample, and variable list of the present study would appreciably alter its basic conclusions.

Since entering office, U.S. Secretary of Education Bennett has been calling for a federal retreat from attention to barriers to college choice (e.g. see *Newsweek*, 1985). Bennett has said federal financial aid policy should concentrate on making sure students can attend somewhere, but not anywhere. In fact, the Secretary and Chester Finn, one of his top assistants (see Finn, 1984a,b) have wondered about the extent to which some higher cost institutions are inappropriately dependent upon, or influenced by, federal student aid.[9] The evidence of the present paper does not directly apply to those concerns, but may provide reason for reconsidering the effects of the retreat from the choice agenda. As recently as the early 1960s, parental income was indeed closely related to the costs of institution attended. The federal government invested heavily to alleviate financial barriers to choice, and by 1980 the relationship had virtually disappeared. Many factors other than federal aid no doubt contributed to this phenomenon, and clearcut causal inferences are impossible, but the empirical suggestion here of alleviation of a significant equity barrier may be worthy of consideration by the various policy actors.

Acknowledgements — The research reported in this paper was supported by a research grant to the author from the Spencer Foundation. Support was also provided by the University of Minnesota, in the form of a single-quarter research leave and separate grants for computing and faculty research. The author wishes to thank Jeff Owings of the National Center for Education Statistics for his help with the High School and Beyond data base, Susan Urahn for her help with the data analysis, and Elaine El-Khawas, Richard Richardson, and the editors of this journal for their helpful comments. Errors are the author's alone.

NOTES

1. In a true meritocracy of college attendance, only Type 1 paths must be insignificant. For a true educational meritocracy in the broadest sense, however, more stringent criteria would be imposed. For example, Type 2 paths in the model might also have to be insignificant. In other words, the effects of background on academic characteristics in *high school* might also be required to be nil.
2. The *post hoc* construction of a sample of only college attenders for path-analytic style analysis may legitimately be criticized as constricting the outcome range of background and academic characteristics in the model. The causal connections between the various possible college attendance outcomes are close, however, and the problems introduced by this approach are assumed to be minimal.
3. The question of defining college attendance is not so easy as in earlier years. Students increasingly are varying the timing and target institutions for their enrollment (see Hearn, 1987). For the purposes of this paper, however, a rather traditional approach was chosen. Other analyses might examine the results for a sample with a much more inclusive definitional perspective regarding enrollment timing and institutional destinations.
4. Data-set limitations required that in-state tuition be used for public institution costs on the data records of students attending public institutions, regardless of whether or not a student was an in-state student. Because of this, the analysis inevitably underestimates the true tuition costs of freshman students crossing state boundaries to attend public institutions. This bias is regrettable, but it is probably not a major problem, since (a) the proportion of students doing so, out of the entire sample, is small, and (b) many of those who did indeed do so were no doubt allowed to pay in-state tuition levels, due to the great number of tuition reciprocity agreements in effect between states.

5. Separate regressions, not presented in Table 2, reveal the variance explained by a model containing only ascribed racial/ethnic and gender characteristics to be 0.01.
6. These results are available from the author upon reader request.
7. A number of factors may contribute to the low explained variance. One factor clearly relevant is the location of school (see Anderson *et al.*, 1972), a topic we were unable to examine here. It may be that the school one attends is as much a function of proximity as of cost, particularly for that majority of students unwilling or unable to travel over state lines for their college educations (Halstead, 1974).
8. The analysis here is also limited by its attention to only one slice of the time sweep of postsecondary educational attainment. Follow-up studies of lower income students at higher cost institutions would seem warranted, given the frequently higher loan and work burdens they often must accept in their college years.
9. These concerns have also been voiced by others in the financial aid community (see various chapters in Fenske *et al.*, 1983).

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