DOCUMENT RESUME

ED 142 616 UD 017 099

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TITLE Access to Higher Education: How Important are Race, Sex, Social Class and Academic Credentials for College Access. Report 226.
INSTITUTION Johns Hopkins Univ., Baltimore, Md. Center for the Study of Social Organization of Schools.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Apr 77
CONTRACT 400-76-0034
NOTE 38p.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Academic Standards; Admission Criteria; *Blacks; *Caucasians; College Admission; *College Attendance; *Higher Education; Longitudinal Studies; *Race; Senior High Schools; *Sex Differences; Social Status

ABSTRACT

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ACCESS TO HIGHER EDUCATION: HOW IMPORTANT ARE RACE, SEX, SOCIAL CLASS AND ACADEMIC CREDENTIALS FOR COLLEGE ACCESS?

Contract No. 400-76-0034

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Report No. 226

April 1977

Published by the Center for Social Organization of Schools, supported in part as a research and development center by funds from the United States National Institute of Education, Department of Health, Education and Welfare. The opinions expressed in this publication do not necessarily reflect the position or policy of the National Institute of Education, and no official endorsement by the Institute should be inferred.

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three programs to achieve its objectives. The Schools and Maturity program is studying the effects of school, family, and peer group experiences on the development of attitudes consistent with psychosocial maturity. The objectives are to formulate, assess, and research important educational goals other than traditional academic achievement. The program has developed the Psychosocial Maturity (PSM) Inventory for the assessment of adolescent social, individual, and interpersonal adequacy. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. It has produced a large-scale study of the effects of open schools, has developed the Teams-Games-Tournament (TGT) instructional process for teaching various subjects in elementary and secondary schools, and has produced a computerized system for school-wide attendance monitoring. The School Process and Career Development program is studying transitions from high school to postsecondary institutions and the role of schooling in the development of career plans and the actualization of labor market outcomes.

This report, prepared by the School Process and Career Development program, examines the effects of race, sex, social class and academic credentials on students' entrance into higher education.

Abstract

This study reports findings from the National Longitudinal Survey of the High School Class of 1972 concerning the influence of race, sex, social class and academic credentials on access to college. Results indicated that academic credentials were prime determinants of college access. However, the degree to which various types of credentials (mental ability, class rank, curriculum) were assets or liabilities to students varied by race, sex and social class. For example, blacks were advantaged in terms of class rank performance and enrollment in academic programs while whites were advantaged on tests of mental ability. Females were advantaged on class rank performance while low SES students were disadvantaged in terms of mental ability tests performance and being enrolled in academic programs.

As for the direct influence of ascribed factors on college attendance, the direct effects of race indicated a black advantage while the direct effects of sex varied by race. White males were more likely to attend college than white females, however, no net sex difference in college attendance existed for blacks. Lastly, the direct effect of social class on college attendance was relatively strong for all groups.

The 30 years following World War II represent a period of unprecedented growth in higher education in the U.S. Total enrollments climbed from 1,364,000 just before the War (1939) to 8,560,000 in 1974 (1). Much of this increase was due initially to returning veterans who furthered their educations, and later to high post-war birth rates. Additionally, throughout this period there was a marked rise in the proportion of persons reaching 18 who went to college. For example, between 1940 and 1960 the proportion of all 18 to 21-year-olds enrolled in college more than doubled (2).

Both trends appear to have reached a plateau. The birth rate climbed until 1957, leveled off for a number of years, and since has been declining. The leveling effect is only now being felt in higher education. More important, the long term rise in the percentage of each new age cohort entering college also appears to be ending. The proportion of high school graduates entering college has not increased much in the past decade, rising only slightly between 1960 and 1972 from 41 to 43 percent. In fact, the proportion actually declined at four-year institutions (3). Thus, it appears that universal higher education will not be achieved in the foreseeable future (4).

If we are about to enter a period of stable or declining postsecondary enrollments, it would seem an especially important time to evaluate conditions of access to higher education (5), particularly with regard to race, sex, and social class. Traditionally, blacks, women and students from lower socio-economic backgrounds have been more successful in gaining access to all levels of education during periods of economic growth and prosperity. Thus, the road ahead may be harder for these groups than it was a decade ago (6). This article reports recent findings from the National Longitudinal Survey of the High School Class of 1972.

Defining Equality of Educational Opportunity

Equal access to higher education is not only an ideal deriving from a commitment to meritocratic values and to an open society, it is also a rational utilization of human resources (7). Yet it is not self-evident how equality of educational opportunity should be defined and hence by what criterion equal access to college should be judged (8).

We could define equal opportunity so broadly as to require a completely random assortment of individuals in college, as might be accomplished by a lottery system or by admitting all applicants (and supporting them). In this instance, not only class, race, and sex would be ignored but also a student's past performance and preparedness. Open admissions policies in some city colleges and most public junior colleges come close to approximating this model as an ideal, but such practices are still rather uncommon and this generally is not how equality of opportunity in higher education has come to be defined.

The admissions practices of most colleges rely upon the academic credentials presented by their applicants. It never has been considered wise educational policy for colleges to completely ignore past academic performance and training. Nor has it been considered their responsibility to correct all the social ills of the past. Thus, in assessing the importance of sex, race, and social class for college attendence, we should distinguish between differences in attendance deriving from differences in the kinds of academic credentials students acquire and those arising entirely independent of such credentials. For example, to what extent do poor grades in high school as opposed to limited family resources decrease the likelihood that a lower-class youth will attend college? Inequalities of the latter type more clearly represent departures from the meritocratic ideal than do those founded in performance differences, although one might well argue both cases. While we will provide evidence relevant to each, the narrower conceptualization of equality of opportunity regarding college

entry is the one we will favor in this report. Thus we ask how class, race, and sex affect the access to college of students with equivalent academic credentials.

The Rise of Academic Credentials

For a number of reasons, the influence of class, race, and sex on college attendance independent of credentials may not be as strong today as it was a generation ago. For one thing, college has become more accessible to children from lower-income families. Many, although certainly not all, of the financial barriers have been removed through federal and state grants, loan, and work-study programs, while the community and junior college movement has brought higher education within commuting distance of probably most people.

Equally important, we believe, has been a dramatic change in the admissions process itself over the past generation. With the exception of most two-year institutions and some land-grant universities that still maintain open admissions policies, most major universities and "the better" liberal arts colleges have become increasingly selective (9). Twenty-five years ago, a typical state university, like Illinois or North Carolina, admitted about a fourth of its freshmen from the bottom half of their high school classes. Today, these institutions admit very few students who did not graduate from the top quarter of their class.

This resulted primarily, we believe, from an imbalance of supply and demand. With the rapid increase in applicants in the late '50s and 1960s, it became necessary for more well-established colleges and universities to devise mechanisms to limit their admissions. Given the nature of the times, it would have been politically unwise for the public institutions to raise tuition rates very substantially (and keep out all but those who could afford to pay) or to limit

enrollments to the sons and daughters of alumni. The solution was to impose universalistic (academic) standards where they did not exist and to raise them where they did exist.

The principle is a simple one and is thought by most college administrators and probably the public, as well, to be educationally defensible and, at the same time, consistent with meritocratic values. When spaces are limited, who should be admitted? Those who are most likely to profit or, in other words, those who will succeed in college. Generally, the best predictor of success in college is high school grade performance, followed by aptitude and academic curriculum (i.e., having an adequate load of courses in English, math, the sciences, and foreign language (10)). These then became the important credentials for college admissions.

As academic credentials have become more important for college admissions at most four-year institutions, it is reasonable to expect that class, race, and sex have become less important, at least in any direct sense. Obviously, who acquires the appropriate credentials is still a very relevant question. In the analysis that follows we examine the extent to which grades in high school, aptitude test scores, and curriculum placement differ by race, sex, and class background. However, our main objective is to estimate the independent effects of these background variables on access to college, controlling for differences in ability, grade performance, and whether or not a student was enrolled in a college preparatory program in high school.

The NLS Sample

The data for this analysis are from a subsample of 13,618 black and white males and females who participated in the Base Year (1972) and First Year Follow-Up (1973) survey of the National Longitudinal Study (NLS) of the High School Senior Class of 1972. The study was sponsored by the National Center for

Educational Statistics (HEW) and conducted by the Educational Testing Service (ETS) and the Research Triangle Institute (RTI).

The project employed a two-stage probability sample with schools as first stage sampling units and students as second stage units. The base-year questionnaire and a 69-minute test battery were administered by ETS in spring 1972 to 16,683 seniors who were enrolled in 1,070 public, private and church affiliated secondary schools within the fifty states of the United States and the District of Columbia. Schools that were located in low income areas or that had a high proportion of minority student enrollment were sampled at approximately twice the normal sampling rate in order to obtain an adequate representation of minority students.

The first follow-up survey was conducted between October 1973 and April 1974 by RTI, with the assistance of the U.S. Census Bureau. Of the seniors who had participated in the base-year survey, 94 percent completed the first follow-up questionnaire -- 65 percent by mail and 29 percent by personal interview. Second and third follow-ups were conducted in the fall of 1974 and 1976. However, the sample used in this report is limited to black and white respondents from the first follow-up with no missing data. All other racial-ethnic groups are excluded from the analysis.

College Attendance Rates

For the purposes of this report we have defined college attendance as enrollment in an academic program at either a two-year or four-year college within two years after graduation from high school. More specifically, if the the student was enrolled in such a program as of the first week of either October 1972 or October 1973, he was counted as a college entrant. Given this definition, 39.6 percent of the students in the NLS attended college.

College attendance rates for the high school class of 1972 are shown in Figure 1 crosstabulated by race, sex, and social class background, as measured here by father's education. Both univariate and bivariate statistics also are presented. The data in this form give a fairly good sense of the comparative size of race, sex, and class differences, as well as an opportunity to examine race by sex by class interactions.

Race differences, in fact, vary substantially within sex and SES levels, so much so that any generalizations about differences in the college attendance rates of blacks and whites without regard to sex and class background would be quite misleading. For example, although the overall rates of college attendance are 8.0 percentage points higher for whites than for blacks, the difference is much larger among males than among females, 13.5 versus 3.4 points. Taking father's education into account alters the picture even more.

In the case of women, race differences actually favor blacks. Within each of the three levels of father's education used here, black females were somewhat more likely to go to college than white females. Although only the 7.6 percentage point difference between black and white females whose fathers did not graduate from high school is statistically significant at the .05 level, the majority of blacks are located here. Among males, whites are still advantaged even when father's education is controlled, although the difference is statistically significant only for the sons of college-educated fathers. Comparing males whose fathers had not graduated from high school, which includes the majority of blacks, the race difference is only 2.7 percentage points.

Turning to sex differences, we find that males overall had slightly higher attendance rates than females, 41.4 versus 37.8. But this actually applies only to whites, where males had a 4.6 point advantage over females. Among blacks, the situation was reversed, with black females having a rate 5.5 percentage

points higher than black males. Controlling for family background does not alter the pattern. Within every level of father's education, white males are more likely to go to college than white females, while black females are more likely to go than black males.

These comparisons also clearly identify class background as being far more predictive of college attendance than either race or sex. Students whose fathers had gone to college were two and one-half times more likely to attend college than were those whose fathers had not completed high school. Although this effect is somewhat larger for whites than for blacks, family background nevertheless is a very strong determinant of college attendance for all groups. In fact, the lowest attendance rate at any level of father's education exceeds all rates for race/sex groups of lower status origins!

To sum up, the college attendance patterns for 1972 seniors were consistent across social class but involved some important race by sex interactions: among males, whites were advantaged, but, among females, blacks were advantaged; among whites, males were advantaged, but, among blacks, females were advantaged. In contrast, the influence of class background appears to be very strong and consistent across all race by sex groups. The important issue that we now address is to determine the extent to which differences in types and levels of academic credentials might explain these differences in college attendance.

Obtaining the Credentials

Earlier in this report, we operationally defined equal access to higher education on the basis of race, sex, and social class differences in college attendance among students with similar academic credentials. In the last section we ignored a student's credentials and presented some descriptive statistics on the rates of college enrollment for different sex by race by class groups. We found, for example, that black females were more likely to

go to college than black males and that white males were more likely to attend than black males. Do these findings hold when differences in ability, high school grades and school curricula, and in the effectiveness of these resources in promoting college attendance, are taken into account? The answer is no! A hypothetical exercise will help illustrate this point.

We are, in effect, asking how important are differences in the kinds of credentials students acquire and in the "payoff" of those credentials in producing differences in attendance rates. In answering this question we use the characteristics of white males as a basis of comparison, and evaluate, first, how changing the other three race-sex groups' levels of resources and, second, how changing the importance of resources for them would affect their rates of enrollment, assuming all other determinants of college access remained unchanged. Thus, we estimate, first, how attendance rates would change were each of the three other race-sex groups to possess the same levels of resources typical of white males. Computationally, this involves substituting the averages for white males on each of the SES indicators, academic ability, class rank and track placement into the college attendance regression equations for each of the other three groups and calculating adjusted attendance rates. Second, we can substitute the white male regression coefficients into the separate equations for the three other groups to evaluate how differences in the importance of or "payoff" to resources contribute to differential rates of attendance. Such regression standardization is frequently employed in the demographic literature for computing adjusted rates (11), but only recently has been used to identify the bases of social inequalities between groups (12).

The adjusted rates resulting from these assumptions are presented in Table 1. The effect of equating all groups' resources at the levels characteristic of white males are especially marked for blacks. Under these conditions, their

expected attendance, for both men and women, would substantially exceed their actual rates, and in fact would even exceed that observed for white males. Thus, differences in levels of ascriptive and academic resources, including academic credentials, are strongly implicated in the depressed college attendance rates of blacks. Standardizing (i.e., substituting regression coefficients) on the "payoff" to resources has somewhat more complicated consequences, dropping the predicted rates for black males and white females below their observed rates, while increasing the likelihood of college attendance for black females. These results suggest that black males and white females are more effective in converting their resources into attainments than are white males, but black females are less so. As will be demonstrated below, however, these summary figures actually obscure complex patterns of offsetting advantages and disadvantages, with whites benefiting from greater "payoffs" to some resources but not to others. Hopefully this exercise demonstrates the importance for patterns of college attendance of group differences in levels of resources and in the conversion of resources into attainments. The remaining analysis will detail the extent and nature of these differences.

We have employed structural equation models and multivariate regression analysis to address these issues (13). More specifically, standardized regression coefficients (or beta weights) will be used to estimate the "net effects" (14) of social class background, race, and sex on each of three different types of academic credentials: aptitude test scores, class rank, and whether or not a student was enrolled in an academic curriculum in high school. In our structural models, scholastic aptitude will be treated as an intervening variable. It is located, in a "causal" sense, between the three predictor variables (i.e., race, sex and SES) and two dependent variables, school grades and curriculum (15). Thus, when estimating the net effect of race on school grades, for example, we will control for differences in ability as well as class background. Ability

effects, however, will not be discussed extensively at this point since they are incidental to our present interests.

We now briefly discuss the measures employed. Sex, race and high school curriculum are entered into the regression equations as dichotomous variables with zero-one codings. The latter was defined as enrollment in an academic curriculum versus other school programs and was determined from school records. Class rank, measured in deciles, also was obtained from school records. Our measure of scholastic aptitude is very similar to most standard college admissions tests, such as those administered by ETS and ACT. It is an equally weighted linear composite of four standardized subtests: vocabulary, reading, letter groups, and mathematics. Finally, rather than using only father's education as a measure of social class background, we included four status background indicators in the regression equations: father's education, mother's education, father's occupational status, and a household item index. However, since we are interested in estimating the total net influence of class background and not just the separate effects of different indicators, we employed Heise's "sheaf" coefficient (16). Computationally the sheaf coefficient for social status (SES) is similar to a partial multiple regression coefficient. It involves summing the direct status regression coefficients for a given dependent variable and then correcting that sum to take into account the interrelationships among the status indicators themselves.

Because we anticipate a number of interactions among the predictor variables, we used four different structural models for estimating race, sex, and SES effects: (a) to obtain the regression coefficients for race, we first computed separate equations for males and females and entered race into the model as a dummy variable; (b) to obtain the coefficients for sex, we computed separate equations for blacks and whites and entered sex into the model as a dummy variable; (c) to identify differences in the model for race and sex groups, we computed

separate equations for each race by sex group, i.e., white-males, white-females, black-males, and black-females; and (d) to assess the simultaneous effects of all three background variables, we computed one set of equations with both race and sex included as dichotomous variables. These results are summarized in Tables 2 and 3. The beta coefficients in the tables may be interpreted as net, standardized effects (17).

The last approach (see "d" above) obscures some important race by sex interactions. Therefore, we will defer discussion of these results until a later section. The reader, nevertheless, may wish to examine Figure 2 since it depicts clearly the causal structure assumed by the fourth approach and summarizes our general framework. We turn now to our results concerning the acquisition of credentials.

(a) Aptitude. Not surprisingly, scholastic aptitude, as measured by standardized tests, is strongly related to social class background and to race for all groups, while sex differences in test scores are negligible. From panel A of Table 2, it can be seen that, for both men and women, SES and race effects are roughly comparable. Thus, being low SES and being black are both associated with lower test scores and to about the same extent. For males, the net effect of race is .250, while it is somewhat larger, at .305, for women. The corresponding status coefficients are .345 and .314. Also, the effects of SES on aptitude are not as strong for black males and females (.271 and .295) as they are for white males and females (.365 and .337, see Table 2, panel C). At least among the males, inspection of the metric values (not reported in Table) indicates that race differences are partly but not wholly due to the overrepresentation of blacks at lower SES levels.

(b) Curriculum. There are no sex differences in curriculum placement. That is, females in the high school class of 1972 were as likely to have been

enrolled in a college preparatory program as males. This contrasts with earlier studies which a decade or so ago showed some tendency for more males than females to enroll in academic curricula (18).

On the other hand, controlling for academic aptitude, there are moderately strong SES and race effects on curriculum enrollment. As anticipated, social class was positively related to being placed in an academic track, especially among whites, even when differences in ability are taken into account. But among blacks, socioeconomic background is not an especially strong determinant of track placement. Lastly, the race difference indicates that blacks are somewhat more likely to enroll in an academic program when compared with whites of similar test scores and status origins. This was true for both sexes and was not anticipated.

(c) Class rank. In contrast to test scores and curriculum enrollment, the most powerful predictor of high school rank (other than academic ability which will be discussed later) is sex. Within both black and white populations, females are substantially more likely than males to end up in the top ranks of their high school class. This is an important finding (and has been replicated elsewhere, 18), since it suggests that women actually are more disadvantaged in terms of the likelihood of college attendance when their superior academic performance is taken into account.

Being black also makes a difference in class rank, but not as generally predicted. When matched by ability, blacks modestly out-rank whites. While we have no definitive explanation for this, it may be that blacks who stay in school through the twelfth grade are somewhat more highly motivated than their white counterparts and, therefore, outperform their white classmates of comparable ability.

The resulting SES effects on class rank were also unanticipated.

The regression coefficients, although uniformly small, are negative for all race by sex groups. That is, at any given level of aptitude, the NLS students from socioeconomically disadvantaged homes, particularly if they are black, were more likely to receive better grades in high school than their middle-class classmates. Earlier studies generally have found either negligible or modest positive influences of social class background on school grades, when controlling for ability (18).

Thus, who obtains the academic credentials for college depends both on the particular kinds of credentials and the kinds of background factors that are considered. In terms of sex differences, the only significant advantage goes to females, who obtain much better grades in high school than do males. As for race differences, blacks outperform whites of comparable ability both in terms of class rank and the likelihood of enrolling in an academic program. At the same time, blacks score much lower on standardized tests of scholastic aptitude than whites, even with socioeconomic background controlled. Regarding SES differences, the main disability associated with low status origins involves test scores. The second disadvantage is that, independent of ability, students from lower-class families are less likely than others to have been placed in a college preparatory program. There is no evidence, however, that students from lower SES backgrounds are at a disadvantage in terms of class rank. To the contrary, these students receive somewhat higher grades than their middle-class classmates of comparable ability. Finally, we might also note that measured ability was found to be the single most important determinant of both track placement and class rank for all groups, exceeding, by a considerable margin, all of the race, sex and SES differences just reviewed.

We caution the reader that these findings apply only to the high school class of 1972 who reached the 12th grade. About 25 percent of this age cohort

had already dropped out of school. Thus, the results reported here are not generalizable to the total age cohort from which the seniors are drawn or to earlier periods in the educational cycle when the ascriptive forces of sex or race or class origins may have been different.

Importance of the Credentials for College

Up to this point, we have taken for granted that scholastic aptitude, school grades, and curriculum placement are the primary, direct determinants of who goes to college. We have assumed too that the gross differences in college attendance rates observed between race, sex and status groups result at least in part from differences in the levels of academic credentials obtained by these groups and in their differential efficacy in capitalizing on the resources they do possess. In this section we examine these assumptions.

Procedurally, we simply have extended the analytic models previously described one step further to include college attendance. The regression results are reported separately for each of the four race by sex groups in Table 3. The figures are standardized regression coefficients; college attendance is the dependent variable.

First, it will be noted that, after taking SES into account, test scores, class rank, and curriculum, in combination, add quite substantially to the amount of variation explained in college attendance patterns -- and more so, in all cases, than the amount explained by class background alone. For example, whereas family status explains 12.7 percent of the variance in college attendance among white males, the academic credentials of these students explains an additional 21.1 percent of the variance. This is a very important finding since it means that, irrespective of any race and sex differences, who goes to college is more strongly affected by academic credentials than by social class,

although the effects of social class nevertheless are appreciable.

Secondly, all three forms of credentials influence college admissions, although they differ in their relative importance for the various race-sex groups. For whites the net effects on college attendance generally are strongest for curriculum, followed by scholastic aptitude. For blacks, aptitude and curriculum are about equally important. Students' class rank in high school generally is the weakest of the three measures. In terms of the relative ranking of these forms of credentials, however, it must be remembered that we are comparing their net effects, and insodoing have partitioned out the ability component in school performance (i.e., class rank) which itself is quite strong.

There is one other difference between groups worth noting. The impact of being placed in an academic curriculum is somewhat less pronounced for blacks. This finding may be relevant to the contrasting views concerning the merit of high school tracking. For those who maintain that such streaming restricts the educational options available to students, these results suggest that this is less the case for blacks. But for those who maintain the value of tracking in preparing for college those students destined for college, blacks are less likely to benefit from these practices than are whites.

The Net Effects of Race, Sex and Class

Having examined differences in the attainment of academic credentials by students of different social backgrounds and the importance of these credentials for college attendance, we now can address the question with which we began, namely, controlling for academic credentials, what are the net effects of race, sex and social class on attendance. Table 3 gives the results.

Net of scholastic aptitude, high school grades, curriculum, and social class, blacks are more likely to go to college than whites. Although the

black advantage is stronger among females (a beta of-.145), the results also hold for males (-.080). Thus, while it is true that the observed rates of college attendance are somewhat higher for whites than blacks, this is due wholly to the higher status origins and measured ability of whites.

The net effects of sex on college attendance vary by race. White males enjoy a small direct advantage over white females; but there is no net sex difference in the college attendance patterns of blacks. The fact that black females ,in the aggregate, are more likely to attend college than black males is thus due entirely to the fact that black women get better grades in high school.

The net effects of social class are strong for all race by sex groups and substantially stronger than the separate effects of either race or sex. It also should be understood that these influences of class background on college attendance are over and above the indirect advantages accruing to high status students through their higher measured ability and greater likelihood of enrolling in a college track.

The Total Effects of Race, Sex and Class

Figure 2, which reproduces the total sample results from Tables 2 and 3, sums up most of the findings of this report. It is a path analysis of the determinants of college attendance in which both race and sex are entered into the regression equations as dichotomous variables. We did not begin with this approach because there were some race by sex interactions that required close inspection and are masked in this model. The major interaction involves the positive path coefficient in Figure 2 between sex and college attendance, which actually applies only to whites. Figure 2 nevertheless is a fairly good approximation of the overall pattern. More important, the model

allows us to estimate the total influences of race, sex and social class, as well as to decompose the influence of these background variables into a component transmitted through academic credentials and a net direct effect representing residual differences between groups that are entirely independent of credentials. The computations are presented in Table 4.

Briefly, the effects of sex on college attendance are small and, to some extent, offsetting. That is, independent of any differences in the academic credentials that the NLS students earned in high school, males were more likely to go to college than females. At the same time, females were somewhat advantaged due to their superior grades in high school and this, in turn, increased their prospects for college attendance. These offsetting influences result in a total effect of sex in the model of only .030, favoring males (see Table 4).

The effects of race, net of social class, are stronger than those of sex and also tend to be offsetting when considering the mechanisms by which being black or white affects college attendance. Apart from differences in class background, the single, direct disadvantage of being black (in this model) is low scholastic aptitude which, in turn, directly and indirectly influences college attendance. If low aptitude were the only consequence of being black, whites would be decidedly advantaged (.111 in Table 4). However, the "aptitude effect," which tends to depress attendance rates for blacks, is partly offset by the greater likelihood that blacks will enroll in a college track and their somewhat higher class rank when compared with whites of similar status origins and measured ability. Blacks also evidence a small attendance advantage independent of ability and class background (-.115). These offsetting influences result in a modestly higher overall probability of attendance for blacks with SES and sex controlled (-.052).

The effects of class on college attendance are all cummulative,

with the exception of that transmitted through high school grades which shows a negligible but negative association with SES, net of ability. About one-third of the total effect of class background on college attendance operates through scholastic aptitude (see Table 4)and a small portion operates through curriculum placement, net of aptitude. Lastly, somewhat more than half of the effects of SES on college attendance are direct, meaning that they are completely independent of all academic credentials. In contrast to the almost negligible gross effects of race and sex, the total effect of social class in the college attendance process indeed is strong (.367).

Discussion

The above results are complex and lend themselves to a variety of interpretations, conclusions and policy implications. We obviously cannot discuss them all in depth, and consequently limit our concluding remarks to only a few of the more important issues raised in the following questions:

1. What do these analyses suggest concerning the nature and extent of inequalities of access to college based on family origin, race and sex?

Our findings regarding this issue are complex and were somewhat unanticipated. With scholastic aptitude and family origin controlled, blacks and women experience little direct disadvantage in terms of the likelihood of attending college, and far less than the disadvantage experienced by low status students. In fact, when compared with whites of comparable status origins and scholastic aptitude, blacks actually are somewhat more likely to attend college. Nevertheless, academic credentials were the major determinants of college access for all groups.

But these critically important credentials were distributed quite unequally among race and sex groups, and their impact on college attendance also varied substantially across groups. For example, blacks and lower status students achieved markedly lower standardized test scores on the average than did whites and higher

status students. Lower test scores in turn were major impediments to college access which, in the case of blacks, largely explains their lower college attendance rates when aptitude is not controlled. But in other instances, blacks, and to a lesser extent women, surpassed the academic accomplishments of whites and men of similar status origins and ability. This was evidenced by the higher class rank of blacks and women and the greater representation of blacks in academic curricula when ability is controlled. The total picture becomes more complex, however, because while blacks and women outperformed whites and males in these instances, their earned credentials were generally less effective in influencing college access than was the case for whites and males.

Thus, there is a complex interplay of ascriptive attributes and academic factors affecting college attendance. The nature of the relationships between these factors must be better understood before more definitive conclusions can be drawn concerning the extent of equality and inequality of educational opportunity. Additional knowledge might be gained by extending the scope of this analysis to include patterns of high school and college attrition and additional stages in students' educational careers. Similarly, and probably more important, where students go to college, which was not addressed in this analysis, would also be informative in further understanding how ascription and achievement affect college access.

2. Given the great importance of academic credentials for college access, should we continue to be concerned with the influence of family status on college admissions?

The answer is yes, definitely so. Our data identify the importance of family status for students' achievement, not only in the transition from high

school to college, but also much earlier in their educational careers. Although, collectively, class rank, curriculum placement and scholastic aptitude were more important in influencing college attendance than the combined effects of race, sex, and social class, social class nevertheless maintained a substantial impact on college access both directly and through its influence on the acquisition of academic credentials.

The strong direct depressant effect of low SES status on college attendance is perhaps most relevant to the present question. This effect, which held independent of race, sex and ability, implies that for many students, especially those of low status background, the educational system is not meritocratic. We believe that much more research is required to reveal why this is the case. Contrary to common assumption, there is considerable evidence that parental income, or the ability of parents to finance their childrens' educations, accounts for relatively little of the social class difference in patterns of college attendance (19). This seems especially tenable in view of increases over the last decade in Federal programs designed specifically to provide financial assistance for the education of low income and minority students.

The cultural dimension of stratification may actually be more important than the economic in this regard. Class-linked differences in student motivations, aspirations and goal-orientations, rather than family finances per se, have been identified as major contributors to social class inequalities in educational attainment (20). While recent research suggests that status and race differences in academic aspirations and expectations may be diminishing, and in fact that the motivations of minority students may in some instances surpass those of majority students (21), all of this literature identifies student motivations and aspirations as more important than parental income in influencing educational attainment. The fact that social policy is directed almost exclusively at economic factors is due, we think, to popular misunderstanding of the nature

of social class and to the ease with which money, rather than schools or people, is manipulated.

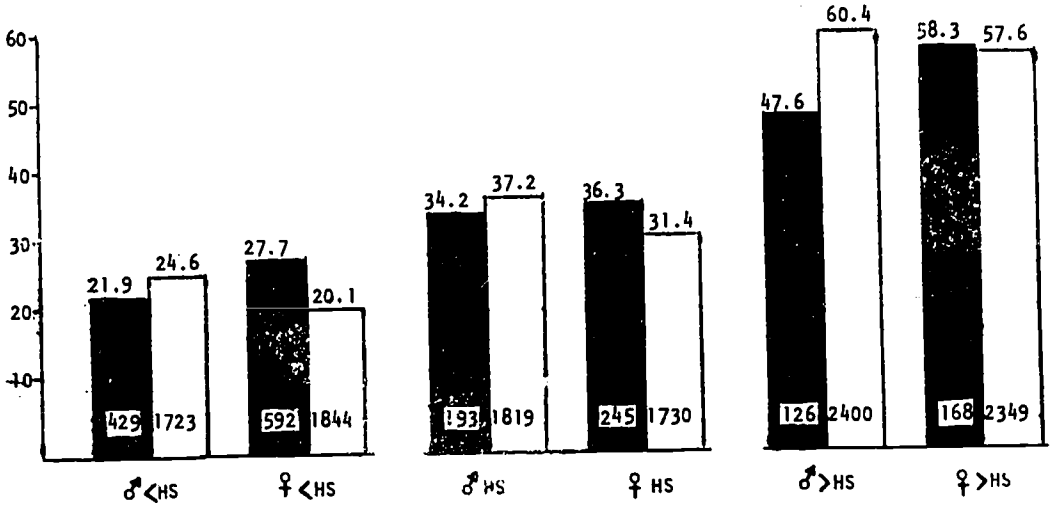
3. Relative to high school grades, should high schools and colleges be placing more or less emphasis on aptitude test scores as a basis for undergraduate admissions?

While this article does not address the issue of the validity of test scores or high school grade performance in predicting college achievement, some of the present findings nevertheless are relevant to the general issue. For example, we found that for all race and sex groups, the combined effects of a student's class rank, curriculum and ability are far more important in affecting college access than social class. However, these groups differed considerably in terms of who obtained the various types of credentials. While blacks were somewhat more likely to be enrolled in academic curricula than whites of comparable ability, both blacks and lower class whites score much lower on aptitude tests. As for class rank, students differed more by sex than by race or social class: males had an advantage in terms of the actual influence of rank on college attendance, although females achieved higher grades than males. More important, when considering the influence of the three types of credentials on college attendance, race and sex groups are in general more similar with respect to their grade performance than with respect to aptitude and curriculum placement.

Thus, while our findings do not present a clear picture and do not exhaust the types of evidence that need be evaluated in addressing the present question, they lead us to conclude that colleges and universities should place less emphasis on test scores and more emphasis on grade performance measures. The basis for this recommendation is that high school grades or class rank measures are far less influenced by family status background and racial status than are scholastic

aptitude measures. Thus, selection on the basis of test scores tends to perpetuate social class and race differences in college attendance, while selection on the basis of grade performance does not, at least not nearly to the same extent.

However, the recent problem of grade inflation, and what this might imply regarding the reliability of class rank, are serious concerns among high school and college administrators. Grade inflation might compel colleges and universities in the future to rely more, rather than less, heavily on test scores in the admissions process. This indeed would be unfortunate since it unwittingly would give middle class whites a larger advantage than they now enjoy. While we believe it would be far better to curb grade inflation and maintain performance standards at all levels of education, colleges also might have to rely more heavily on the college freshman year for further screening of students and for evaluating the adequacy of traditional admission criteria in forecasting college performance.



College attendance rates of the high school class of 1972 by race (blacks versus whites), sex, and father's education (less than high school graduate, high school graduate, or at least some college). Numbers at bottom of each bar are base Ns. Univariate college attendance rates are:

■ 32.6	♂ 41.4	<HS 23.0
□ 40.6	♀ 37.8	HS 34.5
		>HS 58.7

Bivariate college attendance rates by race and sex are:

♂ ■ 29.4	♂ □ 42.9
♀ ■ 34.9	♀ □ 38.3

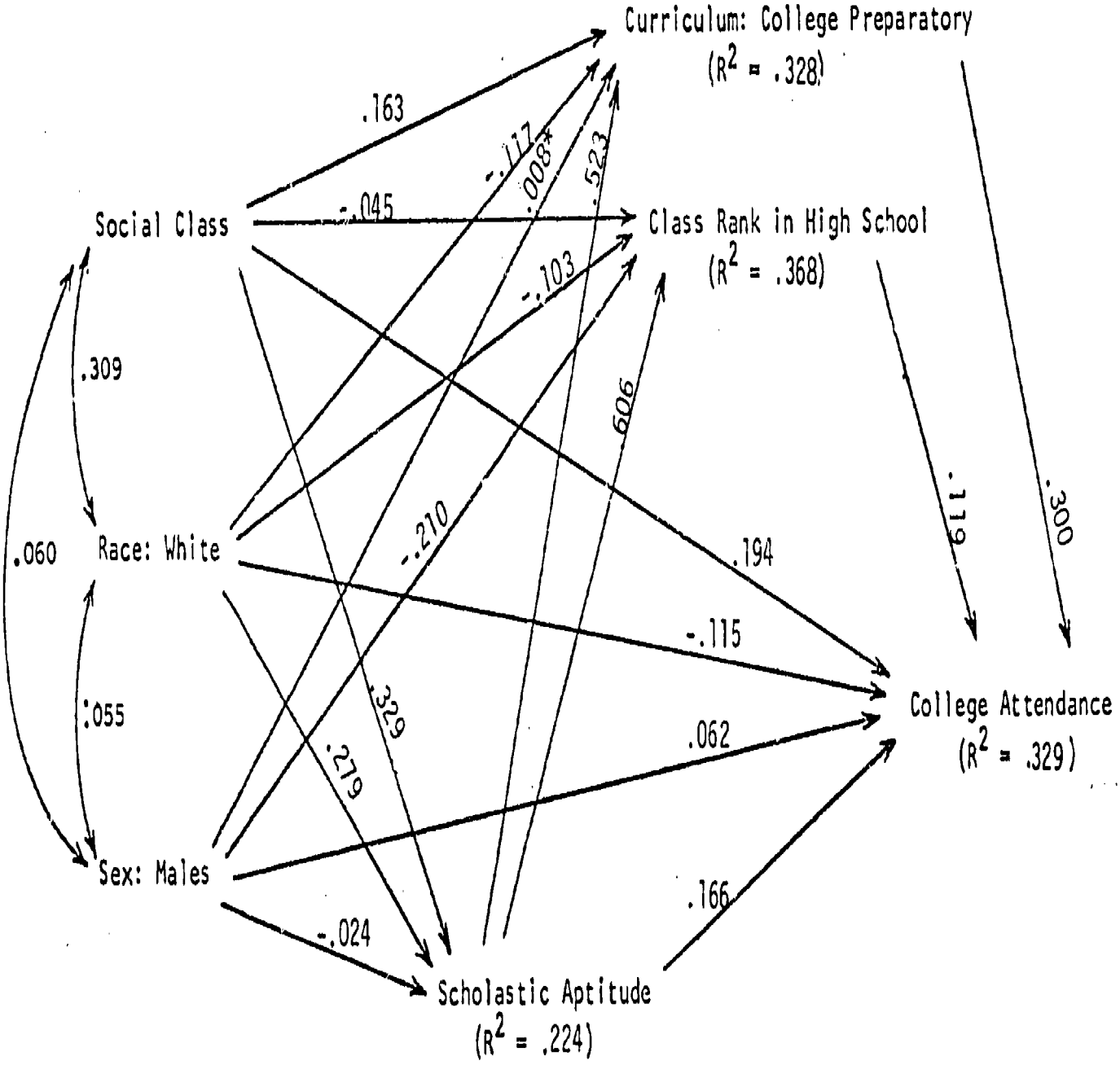


Figure 2. Path model of the college attendance process. All statistics, except the correlations between the exogeneous variables, are standardized regression coefficients (beta weights) and are, unless indicated by an asterisk, significant (at least twice their standard errors). The coefficients between social class, race, and sex are multiple and zero-order correlations. (N=12024)

Table 1. Adjusted Rates of College Attendance, Using White-Male Regression Results as Standard Population

	Observed[a]	Substituting $\bar{X}$'s	Substituting b's
Black Males	.337[b]	.608	.201
White Females	.396	.387	.291
Black Females	.381	.593	.487

a) The observed rate for white males is .445.

b) The observed rates differ from those reported in Figure 1 due to the exclusion from these calculations of cases with missing data on any of the variables used in the regression analysis.

Table 2. Summary of race, sex, and social class (SES) effects on academic credentials (aptitude, high school class rank, and placement in a college preparatory curriculum). All figures are standardized regression coefficients (beta weights), except the SES effects which are sheaf coefficients. All coefficients are statistically significant (at least twice their standard error) unless otherwise noted (*).

	Groups								
	a		b		c				d
Dependent and Independent Variables	Males (5562)	Females (6162)	Whites (10754)	Blacks (1270)	White-Males (5345)	White-Females (5409)	Black-Males (517)	Black-Females (753)	Total Sample (12024)
On Scholastic Aptitude									
Sex Effect[1]	---	---	-.024	-.036	---	---	---	---	-.024
Race Effect[2]	.250	.305	---	---	---	---	---	---	.279
SES Effect	.345	.314	.351	.283	.365	.337	.271	.295	.329
R^2	.218	.230	.123	.082	.133	.114	.073	.087	.224
On Curriculum[3]									
Sex Effect	---	---	.009*	-.016*	---	---	---	---	.008*
Race Effect	-.101	-.130	---	---	---	---	---	---	-.117
SES Effect	.143	.182	.339	.081	.147	.190	.080	.099	.163
Aptitude Effect	.541	.506	.497	.450	.521	.474	.438	.458	.523
R^2	.341	.316	.332	.225	.346	.319	.207	.240	.328
On Class Rank									
Sex Effect	---	---	-.214	-.181	---	---	---	---	-.210
Race Effect	-.109	-.103	---	---	---	---	---	---	-.103
SES Effect	-.033	-.066	-.037	-.099	-.026	-.059	-.103	-.112	-.045
Aptitude Effect	.602	.639	.586	.436	.584	.617	.428	.458	.606
R^2	.327	.350	.382	.222	.337	.365	.184	.198	.368

1) The sex variable is coded "1" for males, "0" for females.

2) The race variable is coded "1" for whites, "0" for blacks.

3) Curriculum is coded "1" for academic program, "0" for all others.

Table 3. Summary of race, sex, and social class effects on college attendance by different race by sex groups. All statistics are standardized regression coefficients (beta weights) and are significant (at least twice their standard errors) unless otherwise noted (*). The dependent variable is college attendance.

	Groups								
	a		b		c				d
Independent Variables	Males (5562)	Females (6162)	Whites (10754)	Blacks (1270)	White-Males (5345)	White-Females (5409)	Black-Males (517)	Black-Females (753)	Total Sample (12024)
Sex[1]	---	---	.069	-.007	---	---	---	---	.062
Race[2]	-.080	-.145	---	---	---	---	---	---	-.115
SES	.185	.202	.192	.155	.179	.204	.180	.144	.194
Aptitude	.159	.177	.147	.219	.142	.157	.215	.221	.166
Curriculum[3]	.281	.314	.309	.209	.287	.326	.219	.210	.300
Class Rank	.151	.083	.121	.104	.157	.079	.107	.101	.119
R^2 (Background Variables Only)	.125	.133	.138	.070	.127	.145	.076	.066	.130
R^2 (Full Equation)	.332	.326	.340	.237	.338	.341	.244	.232	.329

1) The sex variable is coded "1" for males, "0" for females.

2) The race variable is coded "1" for whites, "0" for blacks.

3) Curriculum is coded "1" for academic program, "0" for all others.

Table 4. Decomposition of race, sex, and social class effects in the college attendance process. All statistics are based on the beta weights shown in the model in Figure 2. The dependent variable is college attendance.

	Sex: male	Race: white	SES
Indirect effects			
Via aptitude	-.009	.111	.129
Via class rank and curriculum, net of aptitude	-.023	-.048	.044
Total indirect effects	-.032	.063	.173
Direct effects	.062	-.115	.194
Total effects	.030	-.052	.367

References and Notes

1. A Fact Book on Higher Education (American Council on Education, Washington, 1964); The Condition of Education (The National Center for Educational Statistics, U.S. Government Printing Office, Washington, 1976).
2. M. Trow, International J. Comparative Soc. 2, 144 (1961).
3. S. Peng, Educ. Res., 6, 15 (1977).
4. The proportion of high school graduates enrolling in vocational and technical colleges also declined between 1960 and 1972,from 18 to 10 percent. Only the proportion of students entering two-year junior and community colleges increased, but at the expense of the four-year institutions (3).
5. Higher educational access as used here and throughout this report represents postsecondary enrollment in either a two or four year academic program.
6. The issue of race and sex differences in educational attainments has been addressed in a limited body of recent literature (J.N. Porter, Am. Soc. Rev. 39, 303 (1974); K.L. Alexander and B.K. Eckland, Am. Soc. Rev. 5, 668 (1974); M. Hout and W.R. Morgan, Am. Soc. Rev. 81, 364 (1975); A. Portes and K.L. Wilson, Am. Soc. Rev. 41, 414 (1976); and A.C. Kerckhoff and R.T. Campbell, Soc. of Ed. 50, 15(1977). The present study makes two contributions to this literature. First, the sizeable sample permits more reliable black-white and sex comparisons than heretofore available. Second, our measure of educational access focuses on a critical educational transition, movement from high school to college.
7. C.A. Anderson, J.C. Brown, M.J. Bowman, J. Pol. Econ. 60, 218 (1952); D. Wolfle, The Uses of Talent (Princeton University Press, Princeton, 1971).

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13. The techniques and assumptions of these procedures are detailed in O.D. Duncan, Introduction to Structural Equation Models (New York: Academic Press, 1975).

14. Throughout this report we employ certain conventions regarding terminology that might not be familiar to most readers. Within a path analytic framework, "net" or "direct" effects refer to the influence of an independent variable after all other predictor variables in a given equation have been controlled. "Total" or "Gross" effects are the sum of these direct effects and influences transmitted through intervening variables. The difference between the total and direct effects identifies the extent of indirect influence for a particular independent variable. See J.M. Finney [Soc. Meth. and Res. 1, 176 (1972)] and M.S. Lewis-Beck [Soc. Sci. Res. 3, 95 (1974)] for a more technical discussion of these distinctions.

15. The placement of "scholastic aptitude" in our model may be misspecified to some extent, in that ability is treated as dependent on

sex, race and social class. Our procedure assumes that its correlations with race, sex, and class are not linked to heredity, but rather are wholly environmental. Others, however, disagree. Jencks, for example, has presented calculations suggesting that the correlation between test scores of mental ability and social class is partly due to heredity [Inequality: A Reassessment of the Effect of Family and Schooling in America (Basic Books, New York, 1973)].

16. D. R. Heise, Soc. Meth. and Res. 1, 147 (1972).

17. Because in making certain types of comparisons the unstandardized coefficients are more appropriate to use than the standardized coefficients, we also examined the metric values to make sure that they would not have led to any conclusions different than those reported in the text. They would not have. We also inspected the data for a selected number of non-additive sex and race effects within the same multiple regression framework through a dummy variable analysis (equivalent to analysis of covariance). We found no important interactions other than those reported in the text.

18. K. L. Alexander and B. K. Eckland, ibid. 5, 668 (1974); K. L. Alexander and E. L. McDill, Am. Soc. Rev. 41, 963 (1976).

19. S. S. Peng, E. A. Ashburn, and G. H. Dunteman, Withdrawal from Institutions of Higher Education (Research Triangle Institute, North Carolina, unpublished report).

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21. C. Jencks, ibid. 1972; J. N. Porter, ibid. 39, 303 (1974); A. Portes and K. L. Wilson, ibid., 41, 414 (1976); G. E. Thomas, paper presented at the Annual Meetings of the Am. Soc. Assn. 1977.