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Education and the reproduction of economic inequality in the United States: An empirical investigation☆

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ABSTRACT

This study investigates the relationship between family background and both college completion and earnings for a cohort of young adults. The study is based on sample of 8901 respondents from the National Education Longitudinal Study who were first surveyed as eighth graders in 1988 and last surveyed 12 years later and who were working and not attending school at the time of the last survey. The study finds that social class background has a powerful effect on college completion. The odds of completing college for a student from a high SES background are more than six times higher than for a student from a lower social class background, even when controlling for other predictors such as test scores, grades, and college expectations. The effect of social class background on young adult earnings is more modest, but consistent with other studies. In both cases, the relationship varies widely among gender and racial and ethnic groups.

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The United States is often viewed as the land of opportunity, where the economic rewards of adulthood are less dependent on one's social origins and more dependent on individual interest and effort, with education serving as the primary mechanism for allocating economic rewards. To the extent to which there is equal educational opportunity – all children have an equal opportunity to acquire the amount and type of schooling based on their interests and effort – then education serves to break the link from the transmission of economic privilege from one generation to the next. That belief spurred the creation of free, public schools in the United States soon after the country was established and lead the pioneer of that movement, Horace Mann, to declare public education as "the great equalizer" (Cremin, 1957).

The belief in educational opportunity is widely shared today, especially in the desire to complete college. A national survey of 25,000 eighth grade students in 1988 revealed that two-thirds expected to complete a 4-year college degree (Fig. 1). A similar survey of 15,000 high school sophomores in 2002 found that 75% expected to complete a 4-year degree (Ingels, Curtin, Kaufman, Alt, & Chen, 2002).

Despite the widespread appeal of this belief, economists have debated the extent to which economic privilege is actually transmitted from one generation to another. In an economic essay on the role of families in transmitting economic inequality across generations, Nobel economist Gary Becker notes:

> In every country with data that I have seen. . .earnings regress strongly to the mean between fathers and sons. Probably much less than 40% of the earnings advantages or disadvantages survive three generations. Evidently, abilities and other endowments that generate earnings are only weakly transmitted from parents to children (Becker, 1988, p. 10).
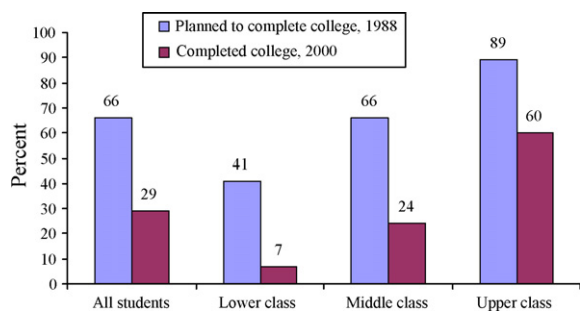
Fig. 1. College expectations of eighth graders in 1988 and college completion in 2000 by family SES.

Other economists dispute this claim. In a review of more recent evidence, Bowles and Gintis conclude:

> Recent evidence points to a much higher level of intergenerational transmission of economic position than was previously thought to be the case. America may still be the land of opportunity by some measures, but parental income and wealth are strong predictors of the likely economic status of the next generation (Bowles & Gintis, 2002, pp. 21–22).

Even Becker acknowledges that family background is still important: "Children from successful families have a significant economic advantage" (Becker & Tomes, 1986, p. S28).

Not only is there disagreement about the extent to which economic inequality is transmitted across generations, but also about the mechanisms of that transmission. Economists have largely studied the contribution of cognitive skills and education to explaining earnings, using a human capital framework, and the extent to which those attributes are transmitted from one generation to the next. Other economists have suggested that additional factors may be equally important:

> In studies of the intergenerational transmission of economic status, our estimates suggest that cognitive skills and education have been overstudied, while wealth, race, and noncognitive behaviors have been understudied (Bowles, Osborne Groves, & Gintis, 2005, p. 4).

A review of the literature on the determinants of children's attainments also pointed out the need for additional research into the role that behavioral and attitudinal factors play (Haveman & Wolfe, 1995, p. 1875).

Even less is known about the role of gender, race, ethnicity, and culture in the transmission of inequality across generations. Most of the research examining economic inequality across generations has been conducted on males, often ignoring racial differences or at best focusing on White and sometimes Black males (for reviews of the literature, see: Bowles, Gintis, & Osborne, 2001; Haveman & Wolfe, 1995). Economic research on the determinants of educational outcomes more often includes control variables for race and gender, but does not examine how the mechanisms themselves operate differently among gender and racial/ethnic groups (Haveman & Wolfe, 1995). Research in sociology and education has found both gen-

der and racial/ethnic differences in the determinants of both educational and economic outcomes (e.g., Farkas, 2003a; Farkas, England, Vicknair, & Kilbourne, 1997; Kao & Thompson, 2003).

This study examines the role of education in reproducing economic inequality across generations in the United States. It draws on a rich, longitudinal dataset that tracked the educational and economic outcomes for a large sample of students who were enrolled in the eighth grade in 1988 and who were surveyed periodically until 2000 when most were aged 26. The study addresses the following questions:

1. What is the relationship between family background and adult economic status and to what extent is that relationship mediated by education and the cognitive and noncognitive characteristics of young adults?
2. What is the relationship between family background and college completion and to what extent is that relationship mediated by education and the cognitive, and noncognitive characteristics of young adults?
3. To what extent do these relationships vary by race, ethnicity, and gender?

1. Existing literature

There is an extensive research literature related to each of the research questions addressed in this study. After reviewing the theoretical underpinnings of this research, the paper provides a brief review of this literature. The paper draws heavily on two recent reviews of the economic literature by Haveman and Wolfe (1995) and by Bowles et al. (2001).

1.1. Theoretical perspectives

The major theoretical perspective in the economic literature draws on an economic view of family behavior in which families transmit genetic and cultural attributes to their children which, in turn, influence their children's earnings – the primary component of economic welfare – as adults (Becker, 1988; Becker & Tomes, 1986). Families make choices about allocating resources to consumption, asset accumulation, or investment in the human capital of their children. The amount, nature, and timing of these resources influence the amount, timing, and nature of families' investments in their children, which are further influenced by other, related choices, such as number of children to have and where to live (Haveman & Wolfe, 1995). The primary resources that form the basis of this investment are parental education and family income and the nature of these investments include "skills, health, learning, motivation, 'credentials,' and many other characteristics" (Becker & Tomes, 1986, p. S5).

This basic economic model has guided much of the empirical work on the intergenerational transmission of economic inequality. For example, Leibowitz (1974) developed an economic model that specifies the relationship between family background and adult income and the factors that mediate the relationship, such as cognitive ability and schooling.

More recently, some economists have expanded this basic economic model. Haveman and Wolfe (1995) develop what they call "a more comprehensive perspective" that incorporates investment choices made by governments (e.g., public support for schooling and health), families, and children themselves (e.g., how much education to acquire). Other economists and social scientists have focused on the role of noncognitive traits – such as motivation, tenacity, trustworthiness, and perseverance – both as determinants of earnings and as mechanisms for transmitting economic status from one generation to another (Bowles et al., 2001; Farkas, 2003b; Heckman & Rubinstein, 2001; Osborne, 2005).

Sociologists and psychologists have also contributed to more robust models. Early work by sociologists focused on the transmission of social status from one generation to the next via the socialization process (e.g., Duncan, Featherman, & Duncan, 1972). Two landmark studies by James Coleman and Christopher Jencks examined the impact of schooling and school resources on student and adult outcomes (Coleman et al., 1966; Jencks et al., 1972). More recently, Coleman (1988) argued that another resource found in families, schools, and peer groups – social capital – also plays a role in the transmission of human and financial capital from one generation to the next.

Economists and other social scientists have also attempted to explain differences in the intergenerational transmission of education and income among racial and ethnic groups. One school of thought argues that differences in child outcomes stem largely from differences in family backgrounds, including genetic endowments, socioeconomic (resources), and sociocultural (practices and beliefs) factors (Becker & Tomes, 1986; Cameron & Heckman, 2001). Another school of thought argues that differences in outcomes also are due to differences in the quality of schools and educational practices, with minority students more likely to attend poorer quality schools, have poorer quality teachers, and suffer from discriminatory practices such as ability grouping, retention, and tracking (Farkas, 2003a; Kao & Thompson, 2003; Oakes, 1986). Still others argue that changes in labor market conditions and opportunities help explain changes in economic outcomes over time (Carnoy, 1996; Grogger, 1996).

1.2. The relationship between family background and adult economic status

A large number of empirical studies have examined the relationship between family background and adult economic status. The studies vary widely in the data and methods used to investigate this relationship and, not surprisingly, the results vary widely. In general, almost all studies have found a positive and significant relationship, but the magnitude of the relationship varies widely. The relationship can be expressed as standardized correlation that adjusts for differences in the underlying distributions of the variables of interest. Earnings and income are frequently measured by their natural logarithm, in which case the intergenerational relationship represents the elasticity, or the percentage change in child's earnings or income due to a one percentage point change in family income or earnings, also a unit-free measure.

In their review of recent studies, Haveman and Wolfe (1995) found that elasticity estimates of family income on child's earnings ranged from .1 to .3 (p. 1864). In a more recent review that accounts for both genetic and environmental factors, Bowles and Gintis (2002) estimate an intergenerational earnings correlation of .4 (p. 16). Mazumder (2005a, 2005b) argues that even those higher estimates are too low because they rely on relatively short-term averages of earnings, which change considerably from year to year and over the lifespan. Using a much longer span of earnings, he estimates an intergenerational elasticity of .62 (Mazumder, 2005a, p. 96). Recent estimates of correlations in brothers' earnings range from .42 to .50, with estimates for more recent cohorts higher than earlier cohorts (Levine & Mazumder, 2007; Mazumder, 2008). Wealth also contributes to the intergenerational transmission of economic status, but few studies include measures of either parents' or children's wealth. Bowles and Gintis (2002) estimate that wealth contributes .12 to the intergenerational correlation of incomes (p. 19).

1.3. Mediating factors

Another body of empirical research has investigated the factors that mediate the relationship between family background and adult economic status.

The key variable in the economic model is educational attainment or schooling, which represents a visible, labor market indicator of human capital. Virtually every empirical study has found a strong and significant relationship between educational attainment and earnings, with the most common estimates of a year of schooling on (natural log) earnings ranging from .07 to .10. In the human capital framework, schooling is thought to affect earnings largely through its impact on cognitive skills. Yet studies that include measures of cognitive skills have found that the estimated contribution of schooling to earnings is reduced by a relatively small amount (an average of 18% according to estimates reviewed by Bowles et al., 2001, p. 1149), suggesting other mechanisms play a role. These same authors then review a series of empirical studies that show a number of psychological and behavioral variables, such as self-esteem and attitudes about responsiveness of the environment to effort (measured with the Rotter or externality scale) independently predict earnings. Synthesizing the research on these causal mechanisms, Bowles and Gintis estimate the correlations from the following causal mechanisms on earnings: IQ, conditioned on schooling (.05); schooling, conditioned on IQ (.10), personality (.03) and race (Black) (.07); accounting for a total intergenerational correlation of .25 (p. 22). A similar accounting for income that includes parental wealth yields a total intergenerational correlation of .32. Even with this more detailed accounting, schooling remains the single most important mechanism for transmitting economic welfare from one generation to the next. Yet a recent study found that schooling did not explain the increased correlation in brothers' earnings from an earlier to a more recent cohort, suggesting non-schooling factors may be exerting

a stronger influence (Levine & Mazumder, 2007). There is also a long-standing debate over the mechanisms that account for the effects of schooling on adult outcomes, particularly over the effects of school resources (see, for example: Bowles & Levin, 1968a, 1968b; Coleman et al., 1966; Hanushek, 1989, 1994, 1996, 1997; Hedges, Laine, & Greenwald, 1994).

Another body of empirical research has examined the relationship between these variables and family background. The most widely studied relationship has been between family background and educational attainment. These studies have found a number of family background variables are significant predictors of educational attainment, including parental income, parental education, family structure, family size, family socioeconomic status (typically a composite measure of income, education, and occupational status—see, for example, (Ingels, Scott, Lindmark, Frankel, & Myers, 1992). Although the magnitude of the predictor variables varies widely depending, in part, on the number of other variables in the model, the combined effects are quite strong, with a combined correlation of about .50 (Bowles & Gintis, 2002, p. 16).

1.4. Racial, ethnic, and gender differences

Much of the empirical research on intergenerational transmission has focused on males (see Haveman & Wolfe, 1995). Racial differences have focused primarily on Blacks, often through the use of race as a control variable rather than through an examination of separate samples to see if the process differs. The few studies that have examined separate samples have found that the process of intergenerational transmission differs across racial, ethnic, and gender groups.

With respect to economic outcomes, a recent study by Hertz (2005) found that the overall income elasticity between parent and children's incomes in a sample drawn from the Panel Study of Income Dynamics was smaller when the total sample was disaggregated into separate White and Black samples. Moreover, the within-group elasticity was smaller for Blacks than for Whites, in part, because Blacks were more likely to remain in low-income categories and less likely to move from a low-income category to a high-income category across generations. In an earlier study, Rumberger (1983) estimated the intergenerational elasticity of wealth between fathers and sons for a sample of young men from the National Longitudinal Surveys (NLS) of Labor Market Experience, controlling for other family background characteristics, was .33 for Whites and insignificant for Blacks. With respect to educational outcomes, Farkas (2003b) reviews a number of studies that show roughly half of observed disparities in educational outcomes among Black, Hispanic, and White students observed at the end of secondary school can be observed at the beginning of kindergarten, which suggests that family and community factors explain part of the disparities and school factors explain another part.

2. Methods

This study is based on data from the National Education Longitudinal Study (NELS) of 1988. NELS is a national lon-

gitudinal study of a representative sample of 25,000 eighth graders begun in 1988 and conducted by the National Center for Education Statistics (NCES). Base-year data were collected from questionnaires administered to students, their parents and teachers, and their school principals. Students were also given a series of achievement tests in English, math, science, and history/social studies. Follow-up data were collected in 1990, 1992, 1994, and, most recently, in 2000, on a subset of the original sample (Curtin, Ingles, Wu, & Heuer, 2002). This paper is based on a sample of 11,384 respondents with valid data from the first (1988) and last (2000) surveys, which was further restricted to the 8901 respondents who were not attending school in 2000.

The analysis is based on a modified human capital framework similar to that employed by Osborne (2005) that examines the relationship between family background and adult earnings (Fig. 1). The model examines the role of three types of mediator variables: years of schooling, cognitive ability, and noncognitive attributes. The model is used to determine the extent to which schooling mediates the relationship between family background and adult earnings and the extent to which cognitive and noncognitive attributes further mediate this relationship. The model was also used to examine the relationship between family background and educational attainment and the mediating effects of cognitive and noncognitive attributes of students when they were in the eighth grade.

The dependent variable is earnings for the respondent's current job. Survey respondents reported their earnings and the rate or time period on which it was based (hourly, monthly, etc.). This information was used to compute estimated annual earnings. Educational attainment was reported by highest level of schooling completed (high school, some college, AA degree, etc.) and converted into years (e.g., B.A. = 16 years). Cognitive ability was based on two measures from eighth grade: a composite of self-reported grades in four subjects from the sixth to the eighth grades, and a standardized composite of test scores in reading and math. Noncognitive ability was based on two measures from eighth grade: locus of control, a composite measure of six items that indicate the extent to which the respondent believes in the efficacy of individual effort or external forces, and educational expectations—the highest level of education they expect to complete. Three measures of family background from the eighth grade are used: (1) parental income; (2) parental education (the highest level of education attained by either parent) and (3) family socioeconomic status or SES (a composite measure of father and mother's educational attainment, father and mother's occupational status, and family income). Because it is the most robust measure of family background, most analyses rely on the single measure of family SES.

The analysis was conducted in two parts, with the analysis in both parts initially based on the entire sample and then on subsamples of males and females for four racial and ethnic groups: Asians, Blacks, Hispanics, and Whites.

The first part estimated a series of models to examine the effect of family background on earnings and the extent to which the relationship was mediated by the set of variables described above. The first model examined the overall relationship between parental background and adult earn-

ings:

$$\ln Y = \alpha + \beta_1 \text{FB} + \mu_y, \tag{1}$$

where $\ln Y$ represents natural log of the respondent's estimated annual earnings and FB represents family background (FB).

The second model adds educational attainment to determine the extent to which it mediates the relationship:

$$\ln Y = \alpha + \beta_1 \text{FB} + \beta_2 \text{EDUC} + \mu_y, \tag{2}$$

where EDUC represents educational attainment.

The third model adds measures of cognitive skills:

$$\ln Y = \alpha + \beta_1 \text{FB} + \beta_2 \text{EDUC} + \beta_3 \text{COG} + \mu_y, \tag{3}$$

where COG represents the two measures of cognitive skills.

The fourth model adds measures of noncognitive skills:

$$\ln Y = \alpha + \beta_1 \text{FB} + \beta_2 \text{EDUC} + \beta_3 \text{COG} + \beta_4 \text{NONCOG} + \mu_y, \tag{4}$$

where NONCOG represents the two measures of noncognitive skills.

The second part estimated a series of models to examine the effect of family background and cognitive and noncognitive skills on 4-year college completion. The analysis focused on college graduates because they are the most advantaged group in the labor market. According to estimates from the U.S. Census, the average earnings of full-time workers with a bachelor's degree is almost twice that of workers with only a high school diploma and the ratio has increased over the last two decades (Day & Newburger, 2002).

The dependent variable in these models is whether the respondent had completed at least a bachelor's degree by the time of the 2000 survey. The models were estimated using logistic regression. Also in these models, social class is divided into three categories: lower class representing the lowest quartile of SES, middle class representing the middle two quartiles, and upper class representing the highest quartile. The models were similar to those in the first part of the study. The first model estimated the log odds of completing college with the only predictors being middle and high social class. Thus, the model estimates the effects of being middle class or upper class on the odds of completing

college:

$$\log\left[\frac{P}{(1-P)}\right] = \alpha + \beta_1 \text{MIDSES} + \beta_2 \text{HIGHSES}, \tag{5}$$

The next model adds measures of cognitive skills to examine the extent to which these variables mediate the relationship:

$$\log\left[\frac{P}{(1-P)}\right] = \alpha + \beta_1 \text{MIDSES} + \beta_2 \text{HIGHSES} + \beta_3 \text{COG}, \tag{6}$$

The final model adds measures of noncognitive skills:

$$\log\left[\frac{P}{(1-P)}\right] = \alpha + \beta_1 \text{MIDSES} + \beta_2 \text{HIGHSES} + \beta_3 \text{COG} + \beta_4 \text{NONCOG}, \tag{7}$$

In logistic regressions, the coefficients can be translated into odds ratios, Exp(B), which represents the change in odds of completing college based on a one-unit change in the predictor variable.

3. Results

3.1. Earnings

Estimated earnings for the first set of models based on the entire sample of data are shown in Table 1. The estimated parameters are standardized regression coefficients. The first model shows a moderate correlation of .253 between parental SES and adult estimated earnings. After introducing the first mediator variable, educational attainment, the coefficient is reduced by half to a value of .129, with an estimated coefficient for educational attainment of 0.244. That is, half of the total effect of parental SES can be explained by its effect on educational attainment. Adding the two cognitive measures in Model 3 reduces the direct effect of parental SES only slightly. Of the two cognitive measures, only the measure of test scores has a small, significant effect on earnings. The final model also reduces the estimated effect of parental SES only slightly. In this model, there is small effect of locus of control on earnings, with a higher score (indicating more personal efficacy) having a positive effect on earnings.

The final model shows that 60% of the effect of parental SES on adult earnings is mediated by the human capital measures of education, cognitive skills, and noncognitive

Table 1
Standardized regression coefficients predicting adult earnings.

	Total effect (1)	Human capital (2)	Modified human capital (3)	Noncognitive model (4)
SES	0.262***	0.130***	0.114***	0.110***
Years of schooling		0.255***	0.226***	0.221***
Grades			0.010	0.002
Test scores			0.053***	0.040***
Locus of control				0.084***
Expected years of schooling				0.000
Adjusted R^2	0.069	0.116	0.119	0.124
Proportion SES explained		0.504	0.565	0.580

Note: Dependent variable is natural log of estimated annual earnings. Predictor variables (all measured in eighth grade) are: socioeconomic status (composite of family income, parents' educational and occupational prestige); years of schooling completed; grades (standardized mean of grades in core academic subjects in grades 6–8); test scores (standardized mean of math and reading scores); locus of control (standardized composite); expected years of schooling at age 26.

*** $p < .01$.

Table 2
Standardized regression coefficients predicting adult earning by gender and race.

	White	Black	Hispanic	Asian
Males				
SES	0.211***	0.297***	0.182***	0.245***
Adjusted R^2	0.044	0.085	0.031	0.056
SES	0.112***	0.095	0.104**	0.045
Years of schooling	0.087***	0.381**	0.128**	0.153*
Grades	0.062**	0.061	0.126**	0.031
Test scores	−0.063***	0.064	0.072	0.362***
Locus of control	0.071***	0.025	0.106**	−0.062
Expected years of schooling	0.088***	−0.092	−0.041	0.003
Adjusted R^2	0.071	0.211	0.082	0.217
Proportion SES explained	0.470	0.680	0.439	0.816
Females				
SES	0.278***	0.337***	0.158***	0.207***
Adjusted R^2	0.077	0.111	0.023	0.039
Parental SES	0.059***	0.124**	−0.004	0.018
Years of schooling	0.334***	0.371***	0.352***	0.206***
Grades	0.011	−0.027	0.009	−0.017
Test scores	0.055**	0.101*	0.086*	0.173**
Locus of control	0.069***	0.056	0.057	−0.001
Expected years of schooling	−0.009	−0.009	0.000	0.146**
Adjusted R^2	0.185	0.249	0.168	0.150
Proportion SES explained	0.788	0.632	0.811	0.913

Note: Variable descriptions same as Table 1.

* $p < .1$.
** $p < .05$.
*** $p < .01$.

abilities. This suggests that parental SES still exerts a strong, direct influence on adult earnings, which may be due to: (1) other, unmeasured forms of cognitive or noncognitive human capital; (2) other, non-human capital mechanisms (e.g., social capital, such as family business ties linked to securing well-paying jobs); or (3) direct monetary transfers from parents to their children.[1]

It is also interesting to note that including measures of cognitive and noncognitive skills in the earnings model reduces the effect of education only slightly. To the extent that later cognitive skills are highly correlated to early cognitive skills, this suggests that education is affecting earnings through other mechanisms.

Next, the earning models were estimated separately by gender and the four racial and ethnic groups. The results are shown in Table 2. Results from the first model are shown in the top portion of each panel. They show that the overall relationship between parental SES and adult earnings is similar across all groups except for Blacks, where the effect is much weaker than for the other groups.

The degree to which the human capital variables mediate this relationship also varies among the groups. Among females and Hispanic and Black males, human capital variables account for most of the relationship between family SES and adult earnings (from .740 to 1.00). For White and Black males, however, the human capital variables account for less than half of the relationship. For these groups, either other mediating mechanisms are operating or there is some sort of direct economic transfer occurring.

The relative influence of the various human capital variables on adult earnings also varies widely among the groups. For females and Hispanic males, education is by far the most important determinant compared to the cognitive and noncognitive variables. Among White males, all five human capital measures exert a small influence on earnings. Among Black males, grades have a stronger influence than education and locus of control has a smaller effect. And among Asian males, test scores are the most important predictor of adult earnings.

3.2. College completion

Next we examined the relationship between family background and college completion.

First, we compared the expectations for completing college in 1988 with the actual rate of college completion in 2000. As shown in Fig. 2, there is a great disparity between expectations and completion—whereas two-thirds of all eighth graders in the United States expected to complete
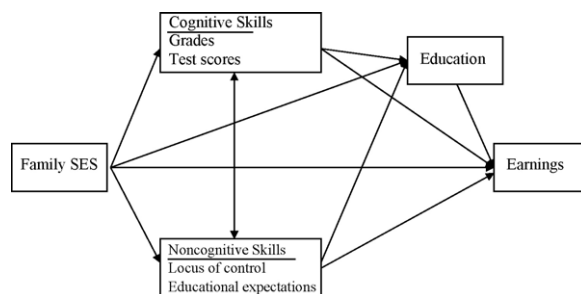
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[1] Schoeni and Ross (2005) estimate that parents provide, on average, $2200 annually to their adult children 18–34, with children in the top one-fourth of income categories receiving at least 70% more than children in the bottom one-fourth.

Fig. 2. Conceptual model of the relationship between family background and adult earnings.

a 4-year college degree, 12 years later less than one-third actually had done so.

Differences by social class were even more pronounced: 60% of upper class students completed college, compared to only 7% of lower class students—a ratio of more than 8 to 1. In other words, upper class students were eight times more likely to complete college than lower class students. Viewed differently, two-thirds of upper class students who planned to earn a college degree did so, whereas only one out of six lower class students who planned to earn a college degree did so.

Of course, some of those social class disparities may be related to disparities in the cognitive and noncognitive skills that affect college completion. Indeed, there were large disparities, as shown in Fig. 3. For example, between high and low SES students there was a gap of .87 standard deviations (*SD*) in grades, 1.22 *SD* in test scores, and .49 *SD* in locus of control. There was also a gap in expectations: twice as many high SES students expected to complete college as low SES students (Fig. 2).

But do these disparities account for the disparities in college completion? The results from the logistic regression models suggest they do not (see Table 3). The results show
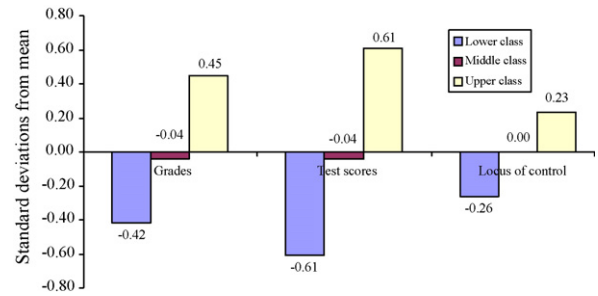
Fig. 3. Cognitive and noncognitive skills by parental SES.

that both cognitive and noncognitive skills predict college completion. A 1 *SD* increase in grades more than doubles the odds of completing college and a 1 *SD* increase in test scores increases the odds by more than 50%. And students who expect to complete college are more than twice as likely to complete college as students who do not expect to complete college.

Yet these variables account for less than half of the estimated effect of the total middle class coefficient and

Table 3
Odds ratios predicting college completion.

	Total effect (1)	Modified human capital (2)	Noncognitive model (3)
Middle SES	3.867***	2.370***	2.091***
High SES	18.755***	8.015***	6.464***
Grades		2.526***	2.376***
Test scores		1.618***	1.532***
Locus of control			0.942**
Expected years of schooling			2.660***
Nagelkerke R^2	0.240	0.430	0.446
Proportion middle SES explained		0.274	
Proportion high SES explained		0.284	

Note: Middle SES is the second and third quartile of SES; high SES is the top quartile of SES; all other variables are the same as in Table 1.

** $p < .05$.
*** $p < .01$.

Table 4
Odds ratios predicting college completion by gender and race.

	White	Black	Hispanic	Asian
Males				
Middle SES	2.544***	2.342**	0.762	0.717
High SES	10.393***	12.360***	1.402	0.828
Grades	2.942***	1.780***	3.269***	1.587*
Test scores	1.331***	1.279	5.038***	1.449
Locus of control	0.856***	1.266	0.665**	1.155
Expectations	2.712***	3.214**	7.688**	7.242**
Nagelkerke R^2	0.476	0.390	0.492	0.338
N	3606	603	419	349
Females				
Middle SES	2.301***	0.733	2.131**	1.608
High SES	6.063***	3.096***	9.878***	2.398
Grades	2.034***	1.901***	2.219****	2.437***
Test scores	1.526***	2.072***	1.996***	2.278***
Locus of control	1.015	1.196	1.307*	0.848
Expectations	2.655***	2.153**	0.927	2.166
Nagelkerke R^2	0.413	0.323	0.435	0.509
N	3960	735	553	379

* $p < .1$.
** $p < .05$.
*** $p < .01$.

slightly more than a third of the estimated effect of the total high SES coefficient. Consequently, social class still matters: controlling for the effects of cognitive and noncognitive skills, students from middle class backgrounds are still twice as likely to complete college as students from lower social class backgrounds, and students from upper class backgrounds are more than six times as likely to complete college as students from lower social class backgrounds.

Next, we estimated the same final model for each gender, racial, and ethnic group as we did with earnings. The estimated odds ratios are shown in Table 4. The results show that the effects of social class vary widely among the groups. For Hispanic males and Asian males and females, social class has no direct effect on the odds of completing college after controlling for the human capital variables. Cognitive variables are significant predictors of college completion for all groups, but the magnitude of the effects vary widely. In most cases, grades are a more powerful predictor than test scores. But for Hispanic males, test scores are much more important. Locus of control is a small, significant predictor for White males and Hispanic males and females, although for males a higher internal scale actually reduces the odds of completing college. The effects of college expectations also vary widely. Expectation for completing college is a much more powerful predictor for Hispanic and Asian males than for other groups. In fact, among Asian and Hispanic females, college expectations are not a significant predictor of college completion.

4. Discussion

This paper investigated the relationship between social class background and adult educational and economic outcomes for a longitudinal cohort of students who attended eighth grade in 1988 and were tracked until 2000, when most were 26 years of age. As with virtually all other studies of this type, social class background predicted adult outcomes. The effect on earnings was modest, with an effect size of .25. This is consistent with a number of other studies (Haveman & Wolfe, 1995), but smaller than studies that utilized longer earnings periods (e.g., Mazumder, 2005a, 2005b).

The effect of social class background on adult earnings was moderated by a number of human capital variables—educational attainment, cognitive skills (tests scores and grades in eighth grade), and noncognitive skills (educational expectations and locus of control). These variables explained about half of the total effect of family background on earnings, suggesting that other human capital and non-human capital variables may also play a role in determining earnings and/or there is direct relationship, which may be related to direct financial transfers taking place. A recent study suggests such transfers are quite common among today's young people (Schoeni & Ross, 2005). Thus, the present study probably understates the intergenerational transmission of inequality, as does the fact that the study focuses on earnings of young adults (Mazumder, 2005a, 2005b).

The relationship between family background and college completion was much stronger. Although a high proportion of students from all social class backgrounds expected to complete college as eighth graders, differences in college completion 12 years later were profound. Students from high SES backgrounds were more than eight times as likely to complete college as students from low SES backgrounds. Even after controlling for a number of significant predictors of college completion, including test scores, grades, and college expectations, the odds of completing college for a middle class student were two times larger than for a lower class student and the odds of completing college for a student from a high SES background were more than six times larger than for a student from a lower social class background. As with the case of earnings, both cognitive and noncognitive human capital measures were significant predictors of college completion.

The study also examined whether the relationship between social class background and adult outcomes differed by gender, race, and ethnicity. In general, the overall relationship was similar, but the role of human capital variables varied widely. Schooling was generally a stronger predictor of adult earnings than cognitive and noncognitive measures for females and Hispanic males, whereas cognitive measures were relatively more important for Black and Asian males. Except for White and Black males, human capital variables mediated most of the relationship between family background and adult earnings.

A similar story emerged for social class and college completion. In this case, however, social class had no direct impact on college completion for Hispanic and Asian males. As in the case of earnings, the relative importance of the various human capital measures varied widely among groups. Among some groups, cognitive variables were more important (e.g., White males, Hispanic and Asian females), whereas among other groups (e.g., Black, Hispanic, and Asian males), noncognitive variables such as college expectations were more important.

The overall conclusion from this study is that social class still matters in America. Students from privileged backgrounds complete more schooling and earn higher wages than students from disadvantaged backgrounds. And human capital variables – education, cognitive skills, and noncognitive skills – only explain some of these relationships. This suggests, for example, that even if students from disadvantaged backgrounds acquire the same level of cognitive skills by the end of eighth grade and have the same desire to attend college, they are still less likely to do so than students from a privileged background.

We also found that this overall relationship operates differently by gender, race, and ethnicity. This finding underscores the need to consider the role of gender, race, and ethnicity more explicitly in research studies of this kind. As more women enter the labor market and as racial and ethnic populations grow, it is even more important to consider these differences for both research and policy.

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