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Differences in the Decision to Attend College Among African Americans, Hispanics, and Whites

Over the past decade, the number of African American and Hispanic undergraduates enrolled in colleges and universities nationwide has increased by 32% and 98%, respectively, whereas the number of White undergraduates has declined by 1% (Nettles & Perna, 1997). Over the same period, the number of bachelor's degrees awarded increased by 43% for African Americans and 90% for Hispanics, compared with an 11% increase for Whites. Although more African Americans and Hispanics are attending college and receiving degrees than ever before (Nettles & Perna, 1997), African Americans and Hispanics continue to be underrepresented among both undergraduates (at 10.0% and 8.0%, respectively) and bachelor's degree recipients (7.0% and 4.2%) relative to their representation in the traditional college-age population (14.3% and 13.7%).

Although much is known about the factors that affect college attendance, only recently have researchers begun to explore variations in college enrollment behavior among students of different racial/ethnic groups (e.g., Freeman, 1997; Hurtado, Inkelas, Briggs, & Rhee, 1997; Jackson, 1990; McDonough, Antonio, & Trent, 1997; St. John & Noell, 1989). Freeman (1997) examined the barriers African American high-school students perceive to limit access to higher education for African Americans. McDonough, Antonio, and Trent (1997) explored differ-

An earlier version of this article was presented at the annual meeting of the American Educational Research Association, San Diego, CA, April 1998.

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The Journal of Higher Education, Vol. 71, No. 2 (March/April 2000)

ences in the variables related to the decision of African Americans to attend historically Black rather than predominantly White institutions. Hurtado and her colleagues (1997) examined differences among African Americans, Hispanics, Asians, and Whites in the number of applications submitted to postsecondary educational institutions and attendance at the first-choice institution. St. John and Noell (1989) and Jackson (1990) explored differences in the effects of financial aid on college enrollment among African Americans, Hispanics, and Whites. Such research is a necessary step in the process of identifying the most appropriate policies and practices for raising the representation of African Americans and Hispanics among college enrollments and degree recipients to that of their representation in the population. This study builds on prior research by comparing the college enrollment decisions of African Americans, Hispanics, and Whites using an econometric model of college enrollment that has been expanded to include measures of social and cultural capital as proxies for expectations, preferences, tastes, and uncertainty.

Theoretical Framework for Examining the Decision to Attend College

A number of researchers (e.g., Fuller, Manski, & Wise, 1982; Manski & Wise, 1983; Schwartz, 1985) have used econometric models to examine the decision to enroll in college. Under econometric models, decisions are based on a comparison between the present value of perceived lifetime benefits and the present value of perceived lifetime costs. The short-term consumption benefits of attending college include enjoyment of the learning experience, involvement in extracurricular activities, participation in social and cultural events, and enhancement of social status. Future benefits include higher lifetime earnings, more fulfilling work environment, better health, longer life, more informed purchases, and lower probability of unemployment (Bowen, 1980; Leslie & Brinkman, 1988; McPherson, 1993). The costs of investing in a college education include the direct costs of attendance (e.g., tuition, fees, room, board, books, and supplies) less financial aid, the opportunity costs of foregone earnings and leisure time, and the costs of traveling between home and the institution.

Econometric models posit that an individual makes a decision about attending college by comparing the benefits with the costs for all possible alternatives and then selecting the alternative with the greatest net benefit, given the individual's personal tastes and preferences (Hossler, Braxton, & Coopersmith, 1989; Manski & Wise, 1983). Because the informational and computational requirements implied by econometric models exceed an individual's information processing capacities, ra-

tional models of decision making are generally regarded as normative rather than descriptive models (Hogarth, 1987). To manage cognitive decision-making demands, individuals adopt such strategies as satisficing or bounded rationality. McDonough (1997) has used Bourdieu's concept of habitus to explain that an individual's expectations, attitudes, and aspirations are not based on rational analyses but are "sensible or reasonable choices" (p. 9). Habitus, or the internalized system of thoughts, beliefs, and perceptions acquired from the immediate environment, conditions an individual's expectations, attitudes, and aspirations (Bourdieu & Passeron, 1977; McDonough, 1997).

Based on their comprehensive review and synthesis of prior research, Hossler, Braxton, and Coopersmith (1989) called for further development of econometric models, concluding, "While the econometric models offer the notion of maximum utility of the perceived benefits of one choice alternative over another, assumptions and linking concepts among variables are . . . lacking" (p. 247). This study attempts to improve the explanatory power of econometric models by using measures of social and cultural capital to reflect differences in expectations, preferences, tastes, and certainty about higher education investment decisions.

Like human capital and physical capital, social and cultural capital are resources that may be invested to enhance profitability (Bourdieu & Passeron, 1977) and productivity (Coleman, 1988) and facilitate upward mobility (DiMaggio & Mohr, 1985; Lamont & Lareau, 1988). Social capital may take the form of information-sharing channels and networks, as well as social norms, values, and expected behaviors (Coleman, 1988). Cultural capital is the system of factors derived from one's parents that defines an individual's class status (Bourdieu & Passeron, 1977). Members of the dominant class possess the most economically and symbolically valued kinds of cultural capital (Bourdieu & Passeron, 1977; McDonough, 1997). Individuals who lack the required cultural capital may (a) lower their educational aspirations or self-select out of particular situations (e.g., not enroll in higher education) because they do not know the particular cultural norms; (b) overperform to compensate for their less-valued cultural resources; or (c) receive fewer rewards for their educational investment (Bourdieu & Passeron, 1977; Lamont & Lareau, 1988).

Value of an Expanded College Investment Model for Examining Racial/Ethnic Group Differences

Recent research illustrates the importance of considering social and cultural capital when examining the college enrollment behavior of African Americans. Through interviews with African American high-

school students about the barriers they perceive to African Americans' participation in higher education, Freeman (1997) found that African American students were uncertain about their ability to pay the short-term costs of attending and about whether the long-term economic benefits of attending would exceed the costs. Interviewees also pointed to the potential influence of physical conditions of the schools attended by African Americans, interest and assistance from teachers and counselors, belief at an early age that pursuing postsecondary education was a realistic option, and African American role models.

Research has also revealed that the amount of social and cultural capital, as well as the ability to convert this capital into educational attainment, differs by social class and race/ethnicity (Arnold, 1993; Lareau, 1987; Orfield, 1988; Wells & Crain, 1994). Based on her qualitative study of educational attainment among African American and Mexican American valedictorians, Arnold (1993) concluded that racial, class, and gendered social structures and cultural norms restrict educational attainment for minority students. Orfield (1988) found that the percentage of African American and Hispanic high-school graduates in the Los Angeles metropolitan area who attended four-year colleges and universities declined during the early 1980s, whereas the percentage of Asian high-school graduates, many of whom were first generation college students, increased, suggesting cultural differences in the value of educational success across racial/ethnic groups. Based upon their review of 21 studies on the long-term effects of school desegregation, Wells and Crain (1994) concluded that attending a school with students of other racial/ethnic groups provided African Americans with access to the information and sponsorship networks that are required for educational attainment.

The extent to which college enrollment behaviors vary across racial/ethnic groups after controlling for other variables is equivocal. St. John and Noell (1989) found college enrollment rates to be comparable for African American, Hispanic, and White high-school seniors after controlling for background, ability, and educational aspirations. African American college applicants were less likely than their White peers to enroll, however, after also controlling for financial aid offers. Other researchers have shown that, compared with their White counterparts and after controlling for other differences, African American high-school students are less likely to enroll in college (Nolfi, et al., 1978), are less likely to attend highly selective colleges and universities (Hearn, 1984), and are less likely to attend their first-choice institution (Hurtado, et al., 1997). Still other research suggests that African Americans are more likely than Whites to enroll in college (Catsiapis, 1987; Kane & Spizman, 1994) and that they tend to enroll in four-year rather than two-year colleges (Rouse, 1994).

Prior research suggests that the ways in which different types of re-

sources influence college enrollment decisions varies across racial/ethnic groups. St. John (1991) found that African American high-school seniors were more likely than White seniors to attend college when region, family background, ability, and high-school experiences were controlled, but were no more likely than White seniors to attend when educational expectations were also controlled. Hispanic seniors were less likely than other students to attend college when region and family background were controlled, but no less likely than White students when test scores and high-school experiences were also taken into account. Jackson (1990) showed that receiving financial aid had a stronger positive effect on the probability of enrolling in college for Black and Hispanic college applicants in 1980 than for their White counterparts, but that the positive effect of financial aid for Hispanics disappeared when background and academic characteristics were also taken into account.

Research Method

This study develops an expanded model of college enrollment and explores variations in the model among African Americans, Hispanics, and Whites. The following research questions are examined:

1. Does including measures of social and cultural capital in an econometric model of four-year college enrollment improve the explanatory power of the model for African Americans, Hispanics, and Whites?
2. How do the variables that are related to the decision to enroll in a four-year college or university vary among African American, Hispanic, and White high-school graduates?

This study focuses on the decision to enroll in a four-year college or university, ignoring the decision to enroll in a two-year college, for several reasons. First, students are likely to consider different criteria, and apply different weights to these criteria, in the decision to enroll in a four-year rather than a two-year institution. As an example, Heller (1998), based on his review of prior research, concluded that two-year college students are more sensitive than four-year college students to changes in tuition and aid. In addition, the long-term economic benefits are greater for those who complete a bachelor's degree than for those who complete lower levels of education (Leslie & Brinkman, 1988; Pascarella & Terenzini, 1991). Finally, the underrepresentation of African Americans and Hispanics is more severe among four-year than two-year college enrollments and among recipients of bachelor's degrees than associate degrees (Nettles & Perna, 1997).

Data from the third (1994) follow-up to the National Educational Longitudinal Study (NELS) are used to examine the research questions. Sponsored by the U.S. Department of Education National Center for Education Statistics, the NELS contains data for a cohort of students in the eighth grade (1988), when they are high-school sophomores (1990), when they are high-school seniors (1992), and two years after their scheduled high-school graduation (1994). Because college enrollment is not an option for students who have not completed high school, the sample is limited to individuals who graduated from high school on schedule (in spring 1992). The 1992–94 NCES panel weight (F3F2PNWT) is appropriate for approximating the population of 1992 high-school graduates from the sample. In order to minimize the influence of large sample sizes and the non-simple random sample design on standard errors, each case is weighted by the NCES panel weight divided by the average weight for the sample (average weight = 205.59). The weighted sample numbers 2,453,260, whereas the adjusted weighted sample used in these analyses numbers 11,933.

Modified Model of College Enrollment Investment Decisions

The model of college enrollment investment decisions used in this research expands on the traditional econometric approach by including measures of social and cultural capital as proxies for expectations, preferences and tastes, and uncertainty. The decision to enroll in a four-year college or university is expected to be a function of the following: direct costs, labor market opportunities, future benefits, financial resources, academic ability, and social and cultural capital.

Table 1 defines the variables in the model. The traditional econometric perspective predicts that the decision to invest in higher education is influenced by expected costs and benefits, financial resources, academic ability, current and expected labor market opportunities, personal preferences and tastes, and uncertainty (Becker, 1962). In this research, the direct cost of attending a four-year college or university is defined as the average in-state tuition at public colleges and universities in the student's home state (Kane, 1994; Schwartz, 1985). Using the average in-state public tuition for each student is appropriate, because the majority of freshmen at four-year institutions attend public rather than private (64%) and in-state rather than out-of-state (73%) institutions (National Center for Education Statistics, 1997).

For many students the direct cost of attendance is reduced by some amount of financial aid. An offer of financial aid has been shown to be an important predictor of college enrollment among high-school gradu-

TABLE 1

Model of the Decision to Enroll in a Four-Year College or University

Variable	Definition
Dependent Variable	
College enrollment	Enroll in a four-year college or university (1 = yes, 0 = no) in October 1992, the fall after graduating from high school.
Direct Costs	
Tuition	Average in-state tuition at public colleges and universities in student's home state. Range: $830 to $5,314
Financial aid	Receive grants (1 = yes) and receive loans (1 = yes). Estimated based on each student's race, sex, tuition and fees, family income, test score, high-school quality, and high-school control.
Labor Market Opportunities	
State unemployment rate	Continuous variable calculated from the Current Population Survey, March 1992 Supplement. Range: 1.2% to 11%.
Future Benefits	
Expected future income	Difference in average adjusted gross income for individuals age 25 to 54 of same sex, race, and region with a bachelor's degree and a high-school diploma. Range: –$424 to $23,881
Financial Resources	
Family income	15 category variable representing total family income from all sources in 1991; 0 = none, 15 = more than $200,000. Missing values are imputed for 17% of the cases based on the average value for students of the same race and socioeconomic status quartile.
Academic Ability	
Test score	Composite score on the reading and mathematics tests administered as part of the NELS data collection. Range: 28 to 71
Curricular program	Dichotomous variable indicating whether student participated in an academic curricular program; 1 = yes, 0 = no
Social and Cultural Capital	
High-school quality	Percentage of 1990–91 high-school graduates enrolled in 4–year college;1 = 0%, 6 = 100%. Missing values imputed for 21% of the cases based on the average value for students of the same race and socioeconomic status quartile.
High-school desegregation	African Americans and Hispanics comprise 10% to 29% of all students (1 = yes), 30% to 59% of all students (1 = yes), or more than 60% of students (1 = yes). Less than 10% is the reference category. Missing data are imputed for 13% of the cases based on the average value for students of the same race and socioeconomic status quartile.
High-school region	South (1 = yes), Northeast (1 = yes), Midwest (1 = yes). West is the reference category
High-school location	Urban (1 = yes, 0 = no) and Rural (1 = yes, 0 = no). Suburban is the reference category.
High-school control	Control of high school: 1 = public, 0 = private
Educational expectations	4 category variable: 1 = No more than high school, 2 = Some college, 3 = Finish college, 4 = Advanced degree.
Parental encouragement	Mother wants student to earn bachelor's degree (1 = yes); mother wants student to earn advanced degree (1 = yes). Lower level of educational attainment is the reference category.
Parental involvement in the student's education	Factorially confirmed scale comprised of 6 variables shown in Table 2. Missing data imputed for 13% of the cases based on the average score for students of the same race and socioeconomic status quartile.

continued

TABLE 1 (*Continued*)

Variable	Definition
Parents' education	5 category variable representing the highest level of education attained by either parent: 1 = less than high school, 5 = advanced degree. Missing values imputed for 10% of cases based on the average value for students of same race and socioeconomic status quartile.
Peer encouragement for education	High (1 = yes) and low (1 = yes) encouragement from peers. Moderate encouragement is the reference group. Scale represents the sum of 4 NELS variables measuring importance among friends of: getting good grades; continuing education past high school; studying; and finishing high school.
Encouragement from others	Teacher and counselor want student to go to college: 1 = yes, 0 = no
Help from school personnel with college admissions activities	Student received help at high school with college application, financial aid application, and college essay (1 = yes) and student received no help with application, financial aid, or essay (1 = yes). Receiving help with one or two of these items is the reference category.
Use of tools to prepare for college admissions tests	Whether the student used one (1 = yes) or more than one (1 = yes) of the following test preparation tools: classes offered by the school, private classes, books, videos, computer programs, and tutors. Using no test preparation tools is the reference category.

ates (Catsiapis, 1987) and college applicants (St. John, 1991), regardless of the type of aid (e.g., grant, loan, work) (St. John & Noell, 1989). Some (e.g., Rouse, 1994) have omitted measures of financial aid, noting that, according to prior research, financial aid has a smaller effect on four-year college enrollment than tuition. Because Heller (1998) concluded from his review of prior research that African Americans are more sensitive than other students to changes in tuition and financial aid even after controlling for socioeconomic status and ability, estimated offers of grants and loans are included in this model to fully explore potential racial/ethnic group differences. Grant and loan offers are estimated using the following procedure. First, the probability of receiving grants is estimated among 1992 high-school graduates who enrolled in a four-year institution based on variables others (e.g., Manski & Wise, 1983) have used to predict financial aid offers (race, sex, tuition and fees, family income, test score, high-school quality, and high-school control). Then, the resulting coefficients are used to estimate the probability of receiving grants for all high-school graduates in the sample. Finally, all cases with a probability of less than 50% are assigned a value of zero, under the assumption that they will not receive a grant offer, and all cases with a probability greater than 50% are assigned a value of one, with the expectation that they will receive a grant offer. This procedure is repeated to estimate loan offers.

Labor market opportunities are measured by the unemployment rate in the state in which the student attended high school (Kane, 1994; Rouse, 1994). State unemployment rates were obtained from the Current Population Survey, March 1992 Supplement and added to the NELS database. Some researchers have estimated the future benefits associated with attending college using earnings data from the Current Population Survey (e.g., Kane, 1994; Rouse, 1994). In this research, future benefits are calculated from the Current Population Survey, March 1992 Supplement, and are defined as the difference between the average adjusted gross income for individuals age 25 to 54 of the same sex, race, and region whose highest level of education is a bachelor's degree and the average adjusted gross income for individuals age 25 to 54 of the same sex, race, and region who have attained high-school diplomas.

Students are also expected to consider their financial resources when determining the relative benefits and costs of investing in postsecondary education (Becker, 1962). Low levels of financial resources may constrain a family's ability to pay the costs of the investment and consequently realize benefits that exceed the costs. In this study, financial resources are measured by total family income from all sources (Kane, 1994; Kane & Spizman, 1994; Rouse, 1994; Schwartz, 1985; St. John, 1991).

From an econometric perspective, academic ability not only represents an individual's initial stock of human capital, but also influences the individual's assessment of future earnings (Catsiapis, 1987). Specifically, low academic aptitude reduces the probability that a student will successfully complete the educational program and obtain a job that produces the expected future earnings premium. Prior research consistently shows that individuals with greater ability, generally measured by test scores, are more likely to invest in higher education (Alexander & Eckland,1974; Becker, 1962; Catsiapis, 1987; Hossler, Braxton, & Coopersmith, 1989; Jackson, 1990; Kane & Spizman, 1994; Rouse, 1994; Sewell, Haller, & Ohlendorf, 1970; St. John, 1991; St. John & Noell, 1989). College enrollment rates have also been shown to be higher for students who participate in academic or college preparatory curricular tracks in high school (Alexander & Eckland, 1974; Alwin & Otto, 1977; Borus & Carpenter, 1984; Hossler, Braxton, & Coopersmith, 1989; Jackson, 1990; Thomas, 1980; St. John, 1991; St. John & Noell, 1989).

The model used in this study expands the traditional econometric approach by considering social and cultural capital to be resources that reflect an individual's expectations, preferences, tastes, and uncertainty about the college investment. One important way social and cultural capital may influence expectations, preferences, and uncertainty about college investment decisions is through the provision of knowledge and

information about college (DiMaggio & Mohr, 1985; McDonough, 1997). High-school quality (Catsiapis, 1987) and high-school desegregation (Wells & Crain, 1994) are two measures of information availability. Region (McDonough, Antonio, & Trent, 1997; St. John, 1991;) and high-school location (Catsiapis, 1987; Rouse, 1994) may reflect variations in the availability of information related to the presence of historically Black colleges and universities and the relative concentration of colleges, respectively. College enrollment rates have been found to be higher for students who attend private rather than public high schools (Falsey & Heyns, 1984), possibly because enrolling in a four-year college or university is more likely to be taken for granted at elite private high schools than at public high schools (McDonough, 1997; Persell, Catsambis, & Cookson, 1992).

Social and cultural capital also refers to the value placed on obtaining a college education (DiMaggio & Mohr, 1985; McDonough, 1997). One indicator of the value of attending college is a student's expectations for his or her own educational attainment (Alexander & Eckland, 1974; Borus & Carpenter, 1984; Hossler, Braxton, & Coopersmith, 1989; Jackson, 1990; Sewell, Haller, & Ohlendorf, 1970; St. John, 1991; St. John & Noell, 1989; Thomas, 1980). A second indicator, parental encouragement, is measured by mother's expectations for the child's education (Jackson, 1990) and a confirmatorily derived factor composite of parental involvement in the student's education. (Table 2 shows the factor components.) Parents' educational attainment may reflect parental encouragement for the student's educational attainment as well as the availability of information about how to acquire a college education (Hossler, Braxton & Coopersmith, 1989; Rouse, 1994).

Several researchers have explored the relationship between peers and educational attainment, as measured by peer college plans and behaviors

TABLE 2
Factor Scale Used in Model of College Enrollment

Factor and Survey Items	Factor Loading	Internal Consistency (alpha)
Parent Involvement in Student's Education		0.83
Discussed things studied in class with parent (1 = never, 3 = often)	0.77	
Discussed school activities with parent (1 = never, 3 = often)	0.76	
Discussed going to college with parents (1 = never, 3 = often)	0.75	
Discussed school courses with parent (1 = never, 3 = often)	0.73	
Discussed preparation for the ACT/SAT test (1 = never, 3 = often)	0.71	
Discussed grades with parents (1 = never, 3 = often)	0.69	

(Alexander, Eckland, & Griffin, 1975; Alwin & Otto, 1977; Nolfi et al., 1978) and peer encouragement for college enrollment (Jackson, 1990). Steinberg (1996), based on his examination of student engagement and commitment to education, found that the influence of peers on student achievement is often greater than the influence of parents, particularly with regard to completing homework and getting good grades. Based on Steinberg's (1996) conclusions, four variables from the NELS database are used to construct a summary measure of peer encouragement.

When measured as a composite of cultural activities, attitudes, and knowledge, cultural capital has been shown to increase the frequency of interactions about postsecondary plans between high-school students and "high-status" individuals, such as teachers, school counselors, and peers (DiMaggio & Mohr, 1985). In this research interactions with high-status individuals are measured by encouragement from a favorite teacher and counselor to go to college and assistance from school personnel with college admissions requirements (Jackson, 1990). The use of admissions test preparation tools (McDonough, Antonio, & Trent, 1997) is a final indicator of social and cultural capital.

Analyses

Descriptive and logistic regression analyses are used to address the research questions. Descriptive statistics, including chi-square and one-way ANOVA, are used to identify differences in the characteristics of African American, Hispanic, and White high-school graduates. For the categorical variables, the chi-square value is adjusted for the relatively large sample sizes (even with the adjusted weight) to show the strength of the relationship using the formula: $\phi = \sqrt{(\chi^2/n)}$. For the continuous variables, differences among the three groups are further examined using orthogonal contrasts. Logistic regression is used to isolate the effects of the independent variables on the dichotomous dependent variable: enrolled in a four-year college or university in October 1992, the fall following high-school graduation (1 = yes, 0 = no). To facilitate the interpretation of the logistic regression coefficients, the delta-p statistic is used to estimate the change in the probability of enrolling in a four-year college or university associated with a one unit change in each independent variable (Cabrera, 1994). In the analyses presented in this study, only effects that meet the threshold of $p < 0.001$ for Whites and $p < 0.01$ for African Americans and Hispanics are considered to be different from zero.

Limitations

In addition to focusing only on the four-year college enrollment decision, three additional limitations restrict this examination of college en-

rollment behavior. First, the variables included in the model are limited by the variables available in the NELS database. One potentially important proxy for information availability is the number of siblings in college, a variable that has been included by other researchers (e.g., Manski & Wise, 1983; Catsiapis, 1987; Jackson, 1990; Kane & Spizman, 1994).

Second, in an effort to preserve sample sizes, missing data are imputed for four variables (family income, high-school quality, high-school desegregation, and parental involvement) based on the average value for students of the same racial/ethnic group and socioeconomic status quartile. Imputing missing values in this manner results in an underestimation of the standard errors. As a result, the regression coefficients for these four variables may falsely appear to be statistically significant and, therefore, should be interpreted with caution.

Third, this study does not examine college enrollment among Asians or American Indians/Alaskan Natives. Unlike Asians, African Americans and Hispanics have historically been underrepresented among postsecondary education enrollments and degree recipients. Though American Indians are also underrepresented in higher education, the number of American Indians in the NELS database is insufficient for detailed analyses.

Findings

Differences in the Characteristics of African American, Hispanic, and White High-School Graduates

The percentage of 1992 high-school graduates attending four-year colleges and universities in the fall after graduation range from 42% for Whites to 35% for African Americans to 26% for Hispanics. The amounts of different types of resources available for the college investment decision vary among African American, Hispanic, and White high-school graduates. Table 3 shows that, on average, African Americans and Hispanics have lower family incomes than Whites (8.7, 8.9, and 10.8, respectively), but the direct costs of attending college are higher for Whites than for African Americans and Hispanics ($2,477 versus $2,282 and $2,008). African Americans and Hispanics are more likely than Whites to receive grants (80%, 86%, and 53%), and African Americans are more likely than Hispanics and Whites to receive loans (33%, 20%, and 18%). Future benefits of completing a bachelor's degree appear to be greater for African Americans than for Whites and Hispanics ($13,779, $11,117, and $9,711)

African American and Hispanic high-school graduates have lower levels of academic ability than their White peers. Average test scores are

TABLE 3
Characteristics of African American, Hispanic, and White High-School Graduates: 1992

Characteristic	Total	African American	Hispanic	White	Statistical Significance
Weighted sample size	2,451,042	283,356	234,633	1,796,150	
Adjusted weighted sample	11,933	1,378	1,141	8,737	
	100%	12%	10%	73%	
Fall 1992 Enrollment Status					$\phi = 0.12$
Not enrolled	36%	44%	44%	35%	
Less than two-year college	6%	6%	7%	6%	
Two-year college	18%	15%	23%	18%	
Four-year college or university	40%	35%	26%	42%	
Estimated tuition	2,399	2,282	2,008	2,477	W > AA > H
(standard deviation)	(786.8)	(726.7)	(631.4)	(798.8)	
Grant offer	60%	80%	86%	53%	$\phi = 0.25$
Loan offer	20%	33%	20%	18%	$\phi = 0.12$
State unemployment rate	6.4	6.4	6.9	6.7	H > (W = AA)
(standard deviation)	(1.5)	(1.2)	(1.2)	(1.6)	
Expected future benefits	11,218	13,779	9,711	11,117	AA > W > H
(standard deviation)	(5,763)	(5,396)	(6,992)	(5,411)	
Female	50%	52%	52%	50%	$\phi = 0.02$
Family income	10.3	8.7	8.9	10.8	W > (AA = H)
(standard deviation)	(2.3)	(2.7)	(2.4)	(2.0)	
Test score	51.6	45.1	47.7	53.1	W > H > AA
(standard deviation)	(8.8)	(7.9)	(8.0)	(8.4)	
Academic curricular program	44%	37%	33%	46%	$\phi = 0.09$
% h-s grads in 4-year college	4.2	4.1	3.9	4.2	(W = AA) > H
10% to 29% Black & Hispanic	29%	17%	13%	33%	$\phi = 0.16$
30% to 59% Black & Hispanic	14%	38%	28%	9%	$\phi = 0.30$
60% + Black & Hispanic	12%	39%	49%	3%	$\phi = 0.53$
South	35%	67%	33%	31%	$\phi = 0.25$
Northeast	20%	14%	13%	22%	$\phi = 0.08$
West	26%	12%	10%	31%	$\phi = 0.20$
Urban high school	28%	48%	47%	21%	$\phi = 0.25$
Rural high school	31%	23%	21%	34%	$\phi = 0.12$
Public high school	90%	94%	92%	89%	$\phi = 0.06$
Educational Expectations					$\phi = 0.06$
High school	9%	8%	12%	9%	
Some college	24%	23%	27%	24%	
Finish college	35%	32%	32%	36%	
Advanced degree	32%	36%	29%	31%	
Mother expects bachelor's degree	37%	29%	30%	40%	$\phi = 0.10$
Mother expects advanced degree	29%	33%	30%	27%	$\phi = 0.08$
Parental involvement	0.00	0.01	-0.11	0.02	(W = AA) > H
(standard deviation)	(0.94)	(0.89)	(0.97)	(0.94)	
Parents' education	3.1	2.7	2.5	3.2	W > AA > H

continued

TABLE 3 (*Continued*)

Characteristic	Total	African American	Hispanic	White	Statistical Significance
Low peer encouragement for education	35%	32%	35%	36%	$\phi = 0.05$
High peer encouragement	29%	36%	29%	27%	$\phi = 0.08$
Encouragement from others	59%	62%	63%	58%	$\phi = 0.04$
No help with college requirements	42%	35%	42%	44%	$\phi = 0.06$
Help with all college requirements	16%	23%	21%	14%	$\phi = 0.10$
One test preparation tool	30%	27%	29%	31%	$\phi = 0.03$
More than one preparation tool	27%	40%	26%	24%	$\phi = 0.12$

NOTE: For the categorical variables, the statistical difference column shows the strength of the relationship, calculated using the following formula: $\phi = \sqrt{(\chi^2/n)}$. A ϕ that is below 0.3 represents a "small" effect size; a ϕ that is greater than 0.5 is "large." For the continuous variables, this column shows differences between the three groups found using orthogonal contrasts.

lower for African Americans and Hispanics than for Whites (45.1, 47.7, and 53.1). Only about one-third of African Americans (37%) and Hispanics (33%) participate in academic curricular programs, compared with nearly one-half (46%) of Whites.

As measured by high-school location and region, African Americans and Hispanics appear to be more likely than Whites to have information available to them about college. Nearly one-half of African Americans (48%) and Hispanics (47%) graduate from urban high schools, compared with just one-fifth (21%) of Whites. Two-thirds (67%) of African Americans attend high schools in the South, compared with one-third of Hispanics (33%) and Whites (31%). On the other hand, substantially higher proportions of African Americans (39%) and Hispanics (49%) than of Whites (3%) attend high schools in which African Americans and Hispanics comprise at least 60% of the student body.

The amounts of other types of social and cultural capital possessed by 1992 high-school graduates also vary by racial/ethnic group. On average, African American and Hispanic students' parents have attained lower levels of education than White students' parents. Higher percentages of African Americans and Hispanics than Whites receive help from school personnel with college applications, essays, and financial aid applications (23%, 21%, and 14%). Average parental involvement is lower for Hispanics than for African Americans and Whites (–0.11, 0.01, 0.02).

Predictors of Enrolling in a Four-Year College or University

Logistic regression was used to control for the effects of costs, benefits, financial resources, academic ability, and social and cultural capital

on the probability of four-year college enrollment. Table 4 presents the delta-*p* statistics for each independent variable. Including measures of social and cultural capital improves the explanatory power of the traditional econometric model, as indicated by the statistically significant chi-square statistic for the block of variables measuring social and cultural capital. Both the −2 log likelihood and the scale deviance divided by degrees of freedom decline, and the pseudo-R^2 increases, as each additional block of variables is added to the model, suggesting subsequent improvements in model fit. The final model correctly classifies the decision of 79% of all students, 76% of students who enroll in college, and 82% of students who do not enroll in college.

With regard to racial/ethnic differences, both African American and Hispanic high-school graduates are less likely than Whites to enroll in a four-year college or university when only sex is taken into account. After adding costs, benefits, and financial resources, Hispanics continue to be less likely than Whites to enroll, whereas African Americans appear to be as likely as Whites to enroll. Also controlling for academic ability results in a higher probability of college enrollment for both African Americans and Hispanics than for Whites. Hispanics are as likely as Whites to enroll in a four-year college or university after adding measures of social and cultural capital to the controls for sex, costs, benefits, financial resources, and ability. The magnitude of the increase in the probability of four-year college enrollment for African Americans compared to Whites falls from 26% to 11% when measures of social and cultural capital are added to the controls for sex, costs, benefits, and ability.

To determine whether the relationship between particular independent variables and the probability of enrolling in a four-year college or university varies by racial/ethnic group, the logistic regression analyses were repeated by entering interactions for African American and Hispanic with each independent variable into the model one interaction at a time. Several interactions (not shown) significantly improved the fit of the model. To facilitate the interpretation of the interactions, separate logistic regressions were conducted for each of the three groups. Table 5 shows the change in model fit associated with adding each block of variables for African Americans, Hispanics, and Whites. Table 6 summarizes the delta-*p* statistics in the final models for African Americans, Hispanics, and Whites.

For all three groups, adding proxies for social and cultural capital improves the fit of the model. Table 5 suggests that academic ability contributed most to the model fit for Whites, followed by social and cultural capital, and then costs, benefits, and financial resources. In contrast, for

TABLE 4

Change in the Probability of Enrolling in a Four-Year College or University Associated with a One Unit Change in Each Independent Variable Among 1992 High-School Graduates

Independent Variable	Race & Sex	Costs & Benefits	Ability	Social & Cultural Capital
African American	-0.065***	0.046*	0.261***	0.109***
Hispanic	-0.157***	-0.072***	0.071**	0.004
Other	0.010	0.075**	0.096***	0.065*
Female	0.055***	0.082**	0.083**	0.012
Tuition and fees		-0.001	0.008***	0.004*
Grants		0.167***	-0.061***	0.002
Loans		0.071***	-0.055**	-0.057*
Unemployment rate		-0.026***	-0.031***	-0.028***
Earnings premium / 100		0.000	0.000	0.000
Family income		0.098***	0.027***	0.007
Test score			0.028***	0.019***
Academic program			0.256***	0.157***
Percentage of graduates in 4-year college				0.084***
10% to 29% Black & Hispanic				-0.080***
30% to 59% Black & Hispanic				-0.044*
60% or more Black & Hispanic				0.039
South				0.051*
Northeast				0.124***
Midwest				0.049*
Urban				0.047**
Rural				0.072***
Public high school				0.034
Expect some college				-0.094**
Expect bachelor's degree				0.284***
Expect advanced degree				0.362***
Mother expects bachelor's				0.137***
Mother expects advanced degree				0.106***
Parental involvement				0.033***
Parents' education				0.058***
High peer encouragement				0.004
Low peer encouragement				0.013
Encouragement from school personnel				0.081***
No help with college requirements				-0.065***
Help with all college requirements				0.019
One test prep tool				0.052***
More than one test prep tool				0.108***
Number of cases in the analyses	10,771			
Model χ^2, *df*	146, 4***	1,176, 10***	3,491, 12***	5,225, 36***
Block χ^2, *df*		1,030, 6***	2,314, 2***	1,735, 24***
-2 log likelihood	14,494	13,464	11,150	9,415
Scaled deviance / degrees of freedom	1.3	1.3	1.0	0.9
Pseudo R^2	0.013	0.098	0.245	0.327
Percentage correctly classified*	59%	67%	75%	79%
Percentage who enroll in college correctly classified*	0%	46%	66%	76%
Percentage who do not enroll correctly classified*	100%	81%	81%	82%
Baseline *p*	0.397			

NOTES: Percent of cases correctly classified is adjusted for the non 50/50 observed distribution.
The delta-*p* statistic is used to represent the change in the probability of enrolling in a four-year college or university associated with a one unit change in each independent variable (Cabrera, 1994).
Delta-$p = \exp(L_1)/[1 + \exp(L_1)] - P_0$ Pseudo $R^2 = \chi^2/(N+\chi^2)$

***$p < 0.001$. **$p < 0.01$. *$p < 0.05$.

TABLE 5

Improvement in Fit Associated with Adding Additional Variables to the Model of Four-Year College Enrollment

Racial/ethnic group		Model 1 Race and Sex	Model 2 Adding Costs and Benefits	Model 3 Adding Ability	Model 4 Adding Social and Cultural Capital
Total	Change in G^2		1,030.0	2,314.2	1,735.2
	Change in *df*		6	2	24
	p-value		$p < 0.001$	$p < 0.001$	$p < 0.001$
African American	Change in G^2		96.0	174.0	179.1
	Change in *df*		6	2	24
	p-value		$p < 0.001$	$p < 0.001$	$p < 0.001$
Hispanic	Change in G^2		57.1	164.7	166.8
	Change in *df*		6	2	24
	p-value		$p < 0.001$	$p < 0.001$	$p < 0.001$
White	Change in G^2		999.2	1,812.0	1,380.2
	Change in *df*		6	2	24
	p-value		$p < 0.001$	$p < 0.001$	$p < 0.001$

NOTE: According to the method recommended by Cabrera (1994), G^2 represents the scaled deviance (−2 Log-likelihood), and *df* represents degrees of freedom. The first model (race and sex) is used as the baseline model.

African Americans and Hispanics the contribution of academic ability was comparable to the contribution of social and cultural capital. Table 6 shows that each of the final models correctly predicts about 80% of college enrollment decisions. The model may be somewhat better for predicting the four-year college enrollment decisions of Whites and African Americans than for Hispanics, as reflected by the pseudo-R^2 ranging from 24.3% for Hispanics to 32.2% for African Americans to 35.8% for Whites.

Although academic ability, as measured by both test scores and curricular track, is an important predictor of college enrollment regardless of race/ethnicity, the results suggest some important differences among African Americans, Hispanics, and Whites in the variables that influence four-year college enrollment decisions. After controlling for sex, future benefits, ability, and social and cultural capital, financial aid in the form of loans appears to reduce the probability of enrolling for African Americans but is unrelated to enrollment for Hispanics and Whites. The likelihood of enrolling in college declines as the earnings premium increases for African Americans, but is unrelated to the earnings premium for Hispanics and Whites. The probability of enrolling in a four-year college increases as the unemployment rate falls for African Americans and Whites, but it is unrelated to the unemployment rate for Hispanics.

Contrary to expectations, African Americans who attend segregated

TABLE 6

Change in the Probability of Enrolling in a Four-Year College or University in the Fall after Graduating from High School Associated with a One Unit Change in Each Independent Variable Among African American, Hispanic, and White High-School Graduates

Independent Variable	Total	African American	Hispanic	White
African American	0.109***			
Hispanic	0.004			
Other	0.065*			
Female	0.012	−0.150	−0.032	−0.009
Tuition and fees	0.004*	0.007	0.003	0.002
Grants	0.002	0.077	0.051	−0.003
Loans	−0.057*	−0.175**	−0.041	−0.008
Unemployment rate	−0.028***	−0.046**	0.003	−0.029***
Earnings premium / 100	0.000	−0.003**	0.000	0.000
Family income	0.007	−0.020	0.026	0.021**
Test score	0.019***	0.015***	0.015***	0.019***
Academic program	0.157***	0.198***	0.161***	0.164***
Percentage of graduates in 4-year college	0.084***	0.152***	0.057*	0.076***
10% to 29% Black & Hispanic	−0.080***	0.099	−0.073	−0.086***
30% to 59% Black & Hispanic	−0.044*	0.220*	−0.103	−0.054*
60% or more Black & Hispanic	0.039	0.291**	−0.021	0.001
South	0.051*	−0.007	0.156*	0.036
Northeast	0.124***	0.022	0.238*	0.109*
Midwest	0.049*	−0.080	0.195	0.049
Urban	0.047**	−0.021	0.017	0.072**
Rural	0.072***	0.103	0.108	0.084***
Public high school	0.034	−0.059	−0.027	0.036
Expect some college	−0.094**	−0.157*	0.024	−0.083*
Expect bachelor's degree	0.284***	0.229**	0.343**	0.285***
Expect advanced degree	0.362***	0.135	0.520***	0.375***
Mother expects bachelor's	0.137***	−0.026	0.100	0.174***
Mother expects advanced degree	0.106***	0.118*	0.110	0.116***
Parental involvement	0.033***	0.006	0.034	0.042***
Parents' education	0.058***	0.102***	−0.031	0.068***
High peer encouragement	0.004	−0.083*	0.041	0.014
Low peer encouragement	0.013	−0.052	0.061	0.030
Encouragement from school personnel	0.081***	0.047	0.083	0.104***
No help with college requirements	−0.065***	−0.013	−0.086*	−0.083***
Help with all college requirements	0.019	0.065	0.020	−0.003
One test prep tool	0.052***	0.049	0.011	0.048**
More than one test prep tool	0.108***	0.106*	0.062	0.101***
Number of cases	10,771	992	1,221	7,555
Model χ^2, df	5,225, 36***	471, 33***	391, 33***	4,213, 33***
−2 log likelihood	9,415	1,026	737	6,896
Scaled defiance / degrees of freedom	0.9	1.1	0.6	0.9
Pseudo R^2	0.327	0.322	0.243	0.358
Percentage correctly classified—adjusted*	78%	76%	80%	80%
Percentage who enroll in college correctly classified*	84%	82%	84%	86%
Percentage who do not enroll correctly classified*	74%	73%	78%	75%
Baseline p	0.397	0.351	0.256	0.420

NOTES: Percent of cases correctly classified corrected for the non 50/50 observed distribution.
The delta-p is used to represent the change in the probability of enrolling in a four-year college or university associated with a one unit change in each independent variable (Cabrera, 1994).
Delta-p = $\exp(L_1)/[1 + \exp(L_1)]$ P_0 Pseudo $R^2 = \chi^2/(N+\chi^2)$
***$p < 0.001$. **$p < 0.01$. *$p < 0.05$.

high schools are more likely to enroll in a four-year college than other African Americans. Whites who attend high schools in which African Americans and Hispanics comprise between 10% and 29% of the student body are less likely than other Whites to enroll in college. High-school region and control are unrelated to college enrollment for all three groups, whereas high-school location is related to enrollment only among Whites.

Aspiring to an advanced degree has a positive influence on college enrollment rates for Hispanics and Whites but is unrelated to college enrollment for African Americans. Parental encouragement, as measured both by mother's educational expectations for the student and parental involvement, and encouragement of school personnel increase the likelihood of college enrollment for Whites but are unrelated to college enrollment for African Americans and Hispanics. Parents' education appears to be less important in the college enrollment decision for Hispanics than for African Americans and Whites. Peer encouragement is unrelated to college enrollment for all three groups, providing support for Steinberg's (1996) conclusion that students may be most vulnerable to peer pressure in lower grades, particularly between the sixth and tenth grades.

Discussion

Econometric models have typically focused on the influence of costs and benefits on college enrollment with such limited controls for differences in preferences, tastes, and uncertainty as race, sex, and parents' education (e.g., Schwartz, 1985; Rouse, 1994). Although several variables (e.g., parents' education) may be interpreted from both an econometric and sociological perspective (Jackson, 1990), interpreting these variables as proxies for social and cultural capital adds additional explanatory power to the traditional econometric approach and suggests additional ways policymakers may intervene to increase college enrollment rates for African Americans and Hispanics.

At least four conclusions may be drawn from this research. First, as others (e.g., St. John & Noell, 1989; Jackson, 1990; Kane & Spizman, 1994) have found, four-year college enrollment rates are comparable for Hispanics and Whites after controlling for differences in costs, benefits, ability, and social and cultural capital. In other words, the lower observed enrollment rate for Hispanics is attributable to their lower levels of the types of capital required for college enrollment, particularly test scores, curricular program, and educational expectations. As found in some prior research (e.g., Catsiapis, 1987; Kane & Spizman, 1994), this study shows that, after controlling for differences in other factors related

to college enrollment, African Americans are about 11% more likely than Whites to enroll in a four-year college or university in the fall after graduating from high school.

One possible explanation for the higher probability of four-year college enrollment for African Americans than for Hispanics and Whites after taking other differences into account is that the variables included in the model do not sufficiently reflect variations in the expected benefits and costs of higher education, preferences and tastes for higher education, and certainty about future labor market opportunities. This finding may also be an indication that affirmative action programs have effectively increased the amount of information about and interest in college among African Americans but not among Hispanics.

Second, the analyses illustrate the importance of examining differences among racial/ethnic groups in the variables that influence college enrollment decisions. As found by others (Jackson, 1990; St. John, 1991), this research shows that the process of deciding to invest in a four-year college varies among African Americans, Hispanics, and Whites. Social and cultural capital is an important contributor to the four-year college enrollment decision for all three groups. In fact, for African Americans and Hispanics, social and cultural capital is as important as academic ability. Bourdieu and Passeron (1977) caution against focusing on the influence of any particular aspect of cultural capital, arguing that the factors operate as a system. Nonetheless, this study suggests that the relationship between particular manifestations of social and cultural capital and college enrollment varies by racial/ethnic group. For example, educational expectations is a less important predictor of four-year college enrollment decisions for African Americans than for Hispanics and Whites. This finding suggests that, compared with their White and Hispanic counterparts with the same educational expectations, African Americans have less access to the information and knowledge about how to actually acquire a college education and achieve their educational goals. Future research should explore racial/ethnic differences in the contribution of social and cultural capital to educational expectations (referred to as "predisposition to college" by Hossler and Gallagher, 1987).

Third, although considering social and cultural capital enhances the explanatory power of college enrollment models for African Americans, Hispanics, and Whites, academic ability is also an important predictor of enrollment for all three groups. Therefore, like some prior research (e.g., St. John, 1991), the results of this study illustrate the continued need to improve academic achievement among African Americans and Hispanics as a step toward increasing their college enrollment. Though not ex-

plored in this study, social and cultural capital may play an important role in determining academic achievement, particularly with regard to the series of choices and selections that characterize a student's formal education (e.g., tracking) (Bourdieu & Passeron, 1977).

Finally, the results of this research provide further support for the conclusion that financial aid alone is not sufficient to increase college access (Mumper, 1998). Prior research has shown that financial aid in the form of grants and scholarships increases the probability of college enrollment (Catsiapis, 1987), particularly among African American and White applicants (Jackson, 1990). Financial aid in the form of loans has been shown to be unrelated to enrollment for African American, Hispanic, and White applicants after controlling for other variables (Jackson, 1990). In contrast, this research shows that grants are unrelated to college enrollment among all three groups and that loans reduce the probability of enrolling for African Americans after controlling for sex, costs, benefits, ability, and social and cultural capital. The negative relationship between loans and college enrollment among African Americans may reflect inadequate knowledge about the availability of financial aid, an aversion or distaste for borrowing, and/or an expectation that future earnings will be insufficient to repay the loans.

Directions for Future Research

This study points to several areas for further research. First, as with other econometric models, the focus of this research was on the decision to enroll in college, with no attention to the various stages in the college enrollment process. Hossler and Gallagher (1987) identified three stages in the college enrollment process: predisposition toward or interest in attending college, search for information about various colleges, and choice of one institution to attend. Although this study provides a preliminary examination of the contribution of social and cultural capital to college enrollment among students of different racial/ethnic groups, additional research is required to understand racial/ethnic group differences in the ways in which social and cultural capital influence particular stages of the process.

Second, although the observed earnings premium is greater for African Americans than for Whites and Hispanics, the earnings premium (a proxy for future benefits) is negatively related to college enrollment for African Americans after controlling for costs, ability, and social and cultural capital. The earnings premium is unrelated to college enrollment, holding other variables constant, among Whites and Hispanics. These findings suggest that the development of expectations about future labor market opportunities varies by racial/ethnic group. Whereas

some evidence suggests that college freshmen understand that future earnings increase with educational attainment and that earnings vary by major field (McMahon & Wagner, 1981), other research shows considerable variation in the earnings that high-school and undergraduate students expect to be associated with various levels of education and experience (Betts, 1996; Dominitz & Manski, 1996). Ashraf (1994) found that the wage premium associated with graduating from college compared with completing no formal education beyond high school fluctuated considerably each year between 1967 and 1986 among African Americans, whereas the premium associated with completing college followed a clear trend among Whites. This suggests that accurately projecting the future labor market opportunities associated with college attendance may be more problematic for African Americans than for Whites. African Americans may expect to receive fewer rewards for their educational investment because of their lower levels of cultural capital (Bourdieu & Passeron, 1977; Lamont & Lareau, 1988) and/or because African Americans are less certain that the economic benefits of attending college will exceed the costs (Freeman, 1997). Although economists assume that people form expectations in the same manner, evaluating the same variables and employing the same information processing rules, the basis for individual expectations has not been examined (Manski, 1993; Dominitz & Manski, 1996). Therefore, future research should explore the ways in which students of different racial/ethnic groups develop expectations about future labor market opportunities.

Third, in this study enrollment rates were found to be higher for African Americans who attend segregated high schools than for other African Americans. This finding conflicts with that of Wells and Crain (1994), but is consistent with that of Borus and Carpenter (1984) who concluded that college enrollment rates would likely increase if more minority students attended schools in which more minority students were enrolled. Further research should explore such issues as whether African Americans who attend segregated schools have greater access to information about college, particularly historically Black colleges and universities, and how personnel at these schools may better communicate the value of higher education to students.

Finally, future research should examine the usefulness of this model for understanding differences among African Americans, Hispanics, and Whites in the decision to enroll in a two-year college and among those who delay college entry. Two-year college enrollment decisions are especially important for examinations of Hispanics, because Table 3 shows that a higher percentage of Hispanic high-school graduates than of White and African American high-school graduates enroll in two-year

colleges (23% versus 18% and 15%). Examining nontraditional students is important, given that some research (e.g., Hurtado et al., 1997) suggests that the college enrollment process is different for students who delay entry into postsecondary education than for traditional students.

References

Alexander, K. L., & Eckland, B. K. (1974). Sex differences in the educational attainment process. *American Sociological Review, 39,* 668–682.

Alexander, K. L., Eckland, B. K., & Griffin, L. J. (1975). The Wisconsin model of socioeconomic achievement: A replication. *American Journal of Sociology, 81,* 324–342.

Alwin, D. F., & Otto, L. B. (1977). High-school context effects on aspirations. *Sociology of Education, 50,* 259–273.

Arnold, K. D. (1993). The fulfillment of promise: Minority valedictorians and salutatorians. *Review of Higher Education, 16,* 257–283.

Ashraf, J. (1994). Differences in returns to education: An analysis by race. *American Journal of Economics and Sociology, 53,* 281–290.

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy, 70 Supplement* (5), 9–49.

Betts, J. R. (1996). What do students know about wages? Evidence from a survey of undergraduates. *Journal of Human Resources, 31,* 27–56.

Borus, M. E., & Carpenter, S. A. (1984). Factors associated with college attendance of high-school seniors. *Economics of Education Review, 3*(3), 169–176.

Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society, and culture.* Beverly Hills, CA: Sage.

Bowen, H. R. (1980). *The costs of higher education: How much do colleges and universities spend per student and how much should they spend?* San Francisco: Jossey-Bass.

Cabrera, A. F. (1994). Logistic regression analysis in higher education: An applied perspective. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research,* (Vol. 10, pp. 225–256). New York: Agathon.

Catsiapis, G. (1987). A model of educational investment decisions. *Review of Economics and Statistics, 69,* 33–41.

Coleman, J. S. (1988, Supplement). Social capital in the creation of human capital. *American Journal of Sociology, 94,* 95–120.

DiMaggio, P., & Mohr, J. (1985). Cultural capital, educational attainment, and marital selection. *American Journal of Sociology, 90,* 1231–1261.

Dominitz, J., & Manski, C. F. (1996). Eliciting student expectations of the returns to schooling. *Journal of Human Resources, 31,* 1–25.

Falsey, B., & Heyns, B. (1984). The college channel: Private and public schools reconsidered, *Sociology of Education, 57,* 111–122.

Freeman, K. (1997). Increasing African Americans' participation in higher education: African American high-school students' perspectives. *Journal of Higher Education, 68,* 523–550.

Fuller, W. C., Manski, C. F., & Wise, D. A. (1982). New evidence on the economic determinants of postsecondary schooling choices. *Journal of Human Resources, 17,* 477–498.

Hearn, J. C. (1984). The relative roles of academic, ascribed, and socioeconomic characteristics in college destinations. *Sociology of Education, 57,* 22–30.

Heller, D. E. (1998). Student price response in higher education: An update to Leslie and Brinkman. *Journal of Higher Education, 68,* 624–659.

Hogarth, R. M. (1987). *Judgement and choice: The psychology of decision* (2nd ed.). Chicago: John Wiley & Sons.

Hossler, D., Braxton, J., & Coopersmith, G. (1989). Understanding student college choice. In John C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 231–288). New York: Agathon Press.

Hossler, D., & Gallagher, K. S. (1987). Studying student college choice: A three-phase model and the implications for policymakers. *College and University, 2,* 207–221.

Hurtado, S., Inkelas, K. K., Briggs, C., & Rhee, B. S. (1997). Differences in college access and choice among racial/ethnic groups: Identifying continuing barriers. *Research in Higher Education, 38,* 43–75.

Jackson, G. A. (1990). Financial aid, college entry, and affirmative action. *American Journal of Education 98,* 523–550.

Kane, J., & Spizman, L. M. (1994). Race, financial aid awards, and college attendance: Parents and geography matter. *American Journal of Economics and Sociology, 53,* 73–97.

Kane, T. J. (1994). College entry by blacks since 1970: The role of college costs, family background, and the returns to education. *Journal of Political Economy, 102,* 878–911.

Lamont, M., & Lareau, A. (1988). Cultural capital: Allusions, gaps, and glissandos in recent theoretical developments. *Sociological Theory, 6,* 153–168.

Lareau, A. (1987). Social class differences in family-school relationships: The importance of cultural capital. *Sociology of Education, 60,* 73–85.

Leslie, L. L., & Brinkman, P. T. (1988). *The economic value of higher education.* New York: American Council on Education, MacMillan.

Manski, C. F. (1993). Adolescent econometricians: How do youth infer the returns to schooling? In C. T. Clotfeller & M. Rothschild (Eds.), *Studies of supply and demand in higher education* (Chap. 2). Chicago: The University of Chicago Press.

Manski, C. F., & Wise, D. A. (1983). *College choice in America.* Cambridge: Harvard University Press.

McDonough, P. M. (1997). *Choosing colleges: How social class and schools structure opportunity.* Albany: State University of New York Press.

McDonough, P. M., Antonio, A. L., & Trent, J. W. (1997). Black students, Black colleges: An African American college choice model. *Journal for a Just and Caring Education, 3,* 9–36.

McMahon, W. W., & Wagner, A. P. (1981). Expected returns to investment in higher education. *Journal of Human Resources, 16,* 274–285.

McPherson, M. S. (1993). How can we tell if financial aid is working? In M. S. McPherson, M. O. Shapiro & G. C. Winston (Eds.), *Paying the piper: Productivity, incentives, and financing in U.S. higher education* (Chap. 6). Ann Arbor: University of Michigan Press.

Mumper, M. (1998). Beyond financial aid: Alternative approaches to improving college participation. *Review of Higher Education, 22,* 83–97.

National Center for Education Statistics. (1997). *Digest of education statistics.* Washington, DC: Author.

Nettles, M. T., & Perna, L. W. (1997). *The African American education data book: Higher and adult education* (Vol. 1). Fairfax, VA: Frederick D. Patterson Research Institute.

Nolfi, G. J., Fuller, W. C., Corazzini, A. J., Epstein, W. H., Freeman, R. B., Manski, C. F., Nelson, V. I., & Wise, D. A. (1978). *Experiences of recent high-school graduates: The transition to work or postsecondary education.* Lexington, MA: Lexington Books.

Orfield, G. (1988). Exclusion of the majority: Shrinking college access and public policy in metropolitan Los Angeles. *Urban Review, 20*(3), 147–183.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research.* San Francisco: Jossey-Bass.

Persell, C. H., Catsambis, S., & Cookson, P. W., Jr. (1992). Differential asset conversion: Class and gendered pathways to selective colleges. *Sociology of Education, 65,* 208–225.

Rouse, C. E. (1994). What to do after high school: The two-year versus four-year college enrollment decision. In R. G. Ehrenberg (Ed.), *Choices and consequences: Contemporary policy issues in education* (Chap. 3, pp. 59–88). New York: IRL Press.

Schwartz, J. B. (1985). Student financial aid and the college enrollment decision: The effects of public and private grants and interest subsidies. *Economics of Education Review, 4*(2), 129–144.

Sewell, W. H., Haller, A. O., & Ohlendorf, G. W. (1970). The educational and early occupational status attainment process: Replication and revision. *American Sociological Review, 35,* 1014–1027.

St. John, E. P. (1991). What really influences minority attendance? Sequential analyses of the High School and Beyond sophomore cohort. *Research in Higher Education, 32,* 141–158.

St. John, E. P., & Noell, J. (1989). The effects of student financial aid on access to higher education: An analysis of progress with special consideration of minority enrollments. *Research in Higher Education, 30,* 563–581.

Steinberg, L. (1996). *Beyond the classroom: Why school reform has failed and what parents need to do.* New York: Simon & Schuster.

Thomas, G. E. (1980). Race and sex differences and similarities in the process of college entry. *Higher Education, 9,* 179–202.

Wells, A. S., & Crain, R. L. (1994). Perpetuation theory and the long-term effects of school desegregation. *Review of Educational Research, 64,* 531–555.