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A SERU Project Research Paper \*

## The Influence of Wealth and Race in Four-Year College Attendance

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### ABSTRACT

College is increasingly essential for economic and social mobility. Current research devotes significant attention to race and socioeconomic factors in college access. Yet wealth's role, as differentiated from income, is largely unexplored. Utilizing a nationally representative dataset, this study analyzes the role of wealth among students who attend four-year colleges. The hypothesis that wealth matters through the provision of differential habitus, social capital, and cultural capital that support the college-going process, is tested through the application of a series of binary logistic regressions. The results indicate that while wealthier students are much more likely to attend a four-year college than their less wealthy peers, the influence of wealth is essentially eliminated once we consider academic achievement, habitus, and social and cultural capital. This indicates that wealthier students garner advantages through increased academic preparation and through the characteristics of their upbringing, such as the type of school attended and parental expectations. Furthermore, controlling for wealth causes the disparities in four-year college attendance associated with race to disappear. Notably, Hispanic students are significantly more likely than white students to attend a four-year college in certain specifications, while black and Asian students are not significantly different from white students in any specification.

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### I. PROBLEM STATEMENT AND RESEARCH QUESTIONS

As the economic and social returns associated with college attendance grow rapidly (Baum & Payea, 2004; Hoxby, 1998), higher education has become progressively more important to American social and economic mobility. In 2005, the median high school graduate income was \$25,829, as compared to \$43,954 for those with a bachelor's degree (U.S. Census Bureau, 2005). This gap in earnings between high school graduates and those with bachelor's degrees or higher has been increasing over time, and will likely only increase further in the future (Katz & Murphy, 1992). Leading scholars declare that the lack of a response to

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this “extraordinary economic incentive ... is *the* major threat to the continuing excellence of American higher education” (Bowen, Kurzweil, Tobin, & Pichler, 2005: 70-71).

Due primarily to data limitations, higher education research has focused chiefly on income and less on other socioeconomic proxies, with the specific role of wealth largely left unexplored. Wealth and income are markedly different. Wealth measures the total supply of financial resources available to a family, whereas income only measures a family's stream of cash payments at any given time. As such, wealth serves as a better measure of the financial well-being of families – it “signifies the command over financial resources that a family has accumulated over its lifetime along with those resources that have been inherited across generations” (Oliver & Shapiro, 1997:2).

If wealth and income were strongly correlated, income would be an adequate measure of financial well-being, but they are not (Keister, 2000). When income stemming from assets<sup>1</sup> is not included in measuring income, the correlation is 0.26 (Lerman & Mikesell, 1988). Wealth can provide income (and income may eventually build to wealth), but wealth also has other beneficial characteristics that income does not have. Wealth brings stability. It generally does not change drastically over time in the way that income may. It can be passed on between generations. Unlike income, it is not used for daily expenditures; it is used to “create opportunities, secure desired stature and standard of living, or pass class along to one's children” (Oliver & Shapiro, 1997:2).

Moreover, research indicates that focusing solely on income to measure financial resources ignores the huge gaps in wealth by race. While the income gap between blacks and whites is still very large, the wealth gap is even larger. In 1998, black households earned sixty-two cents for each dollar earned by white households (Oliver & Shapiro, 1997). In comparison, black households held between zero cents to twenty-five cents for each dollar of wealth held by white households<sup>2</sup>.

More important for this study, the disparity in wealth between blacks and whites is present among households with children. Nearly twice as many black children as white children (almost 75% of all black children) grow up in households without any net financial assets (Oliver & Shapiro, 1997: 88). Even more striking, nearly 90% of black children are raised in households without the financial resources to support themselves at the poverty line through three months without income – slightly more than half of white children live in households with similarly dire financial situations (Oliver & Shapiro, 1997: 88).

Nearly all of the research on race and wealth has focused exclusively on blacks and whites. The situation of Asians and Hispanics has largely been ignored, even though their respective plights would further inform the role of race and ethnicity in wealth.

Moreover, much of the research on college access that examines the role of socioeconomic status or race focuses on these issues separately. This study intends to not only examine the role of wealth in who attends four-year colleges, but will also focus on how wealth changes what we know about racial and ethnic disparities in four-year college attendance.

As such, this paper aims to further the understanding of wealth's role in college access by answering the following research questions:

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<sup>1</sup> Asset income is the amount of money that an asset generates, e.g. interest and capital gains income from bonds and securities.

<sup>2</sup> The ratio depends on the measure of median and mean wealth. The ratio is 0.08 when using median net worth (the value of all assets minus all debts) and 0.25 when using mean net worth. When looking at median net financial assets (net worth less equity in a home or vehicle), the ratio is 0.0, as the median for black households is \$0. When using mean net financial assets, the ratio is 0.11 (Oliver & Shapiro, 1997: 86).

1. What is the effect of family wealth on four-year college attendance?
2. How do disparities in wealth across different racial and ethnic groups affect four-year college attendance?

This paper is organized as follows: Section II describes the conceptual framework that guides the study, Section III briefly reviews the literature, Section IV presents the data and methodology, Section V discusses the findings, and Section VI considers the implications for policy.

## II. CONCEPTUAL FRAMEWORK

To analyze how wealth affects four-year college attendance, this study creates a framework based on an abbreviated form of Hossler and Gallagher’s (1987) three-stage model of student college choice, with sociology’s status attainment model (P. Blau & Duncan, 1967) and an econometric model embedded within. Hossler and Gallagher’s three-stage model is comprised of the following phases:

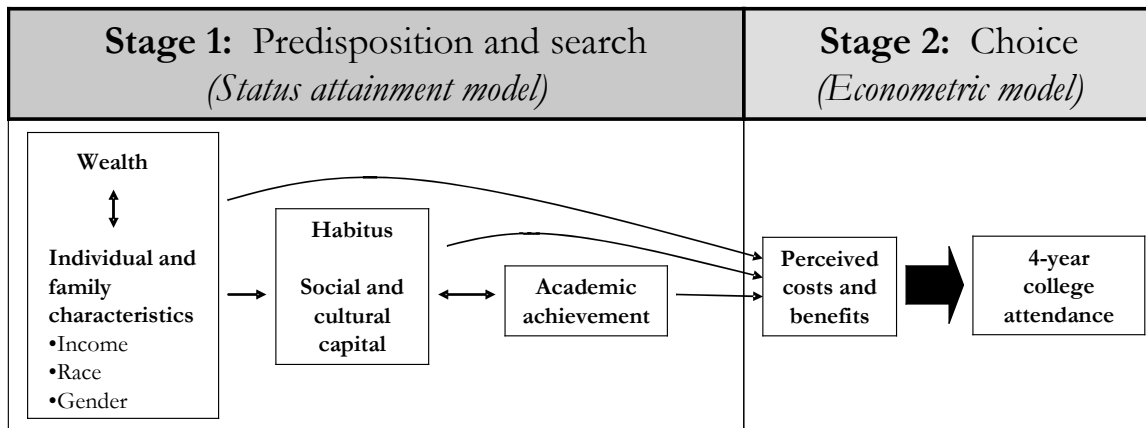
1. Predisposition – The stage at which students determine whether they will continue their formal education after high school.
2. Search – The stage at which students gather information about postsecondary institutions.
3. Choice – The stage at which students formulate a choice set and decide which institution to attend.

Status attainment theory states that together, socioeconomic status and academic ability mold a student’s college aspirations<sup>3</sup>, and econometric theory poses that a rational person will consider the present value of costs and benefits and choose the option with the greater benefits, given her preferences.

From these theories, this paper posits a two-stage process:

1. Predisposition and search/status attainment stage – merges the *search* stage with the *predisposition* stage and places the status attainment model within this merged *predisposition and search* stage.
2. Choice/econometric stage – places the econometric model within the *choice* stage.

Figure 1. Conceptual framework of the college choice process.



Together, these two stages create the conceptual framework found in Figure 1.

This conceptual framework proposes that wealth and other background characteristics interact with one another, and that together they affect a student's habitus, social capital, and cultural capital. The habitus is "a system of durable, transposable dispositions which functions as the generative basis of structure, objectively unified practices" (Bourdieu, 1984: vii). In other words, the habitus is a person's collection of dispositions, continually developed and reformulated from one's upbringing and direct environment; it shapes one's expectations, attitudes, gestures, techniques, and aspirations (Bourdieu & Passeron, 1977; Harker, 1990; McDonough, 1997). Social capital refers to the value derived from social networks (Portes, 1998). Cultural capital, as defined by Bourdieu, is culturally-valued taste and consumption patterns than one inherits (Bourdieu, 1986; Harker, 1990). This definition is expansive and includes abstract as well as concrete inherited items, such as art, education, and language. Capital's value is associated with the social and cultural traits of the habitus (Bourdieu, 1984, 1986; Harker, 1990).

The habitus, social capital, and cultural capital directly shape a student's academic achievement, and a student's academic achievement feeds back to shape her habitus, social capital, and cultural capital. Habitus, social capital, cultural capital, and academic achievement all directly affect the perception of the costs and benefits of a college education. A student's background characteristics also directly affect how she perceives the costs and benefits of continuing her formal education into college. In this choice stage, a student will weigh the perceived costs against the perceived benefits and decide whether to attend college and, if the student chooses to enroll in college, which college to attend.<sup>4</sup>

### III. LITERATURE REVIEW

The literature surrounding wealth and the college-going process is sparse, due likely to the lack of data available on wealth. Furthermore, the proportion of studies within this genre that explore the role of race is rather small. Most of the research that analyzes the role of race only looks at blacks and whites, and the one study that also considers Asians and Hispanics does so only briefly.

A recent study by Dalton Conley (2001) uses binary logistic regression to examine the relationship between wealth and college participation. In this short paper, he concludes that parental wealth has a strong effect on postsecondary access and may affect college completion, but has no significant effect on graduate school attendance. Conley also challenges the idea that wealth's role in affecting college access is through the provision of income by modeling an income stream from wealth. He finds differential attributes of wealth and income in their effect on college participation.

Due to data limitations and the limited nature of the paper<sup>5</sup>, Conley only controls for the most basic of background characteristics.<sup>6</sup> He does not control for other factors that college choice models indicate are important in the decision to attend college, such as social and cultural capital, and costs of college, nor does he study Asians separately from blacks, whites, and Latinos. In the eight logistic regressions he runs, he

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<sup>3</sup> More generally, Blau and Duncan pioneered the belief that the effects of social origin on occupational status were largely due to the effects of social origin on educational attainment and the effect of educational attainment on occupation.

<sup>4</sup> The choice stage can be used to model whether or not a student decides to attend college, and if she does decide to attend college, what type of college to attend – e.g. a community college, a less-selective state university, or a highly selective Ivy League college. This paper focuses on the choice of a four-year college.

<sup>5</sup> Dalton states in this paper: "I caution that the purpose of this article is not to provide the definitive word on measuring the effects of wealth and its relationship to education..." (p. 62)

<sup>6</sup> Conley's variables are: age, gender, race (black, white, Latino, other), education, parental age, income, household head's employment status, occupational prestige, family structure, parental education, and parental net worth.

finds that a few of the coefficients for blacks are statistically significant at the  $p < 0.05$  level, and none of the coefficients for Latinos or other races/ethnicities are significant. Conley shows in that blacks have a statistically significant advantage over whites in total years of schooling, after controlling for family characteristics. This finding demonstrates the importance of family characteristics, including family wealth, in a child's educational attainment, even though his goal is only to show that wealth matters in a way different from income, which he demonstrates quite clearly.

Another study looks at the effect of parental wealth on children's completed schooling and finds that large amounts of parental assets during the child's youth have a significant positive effect on years of schooling completed by age 23 (Axinn, Duncan, & Thornton, 1997). This study does not look specifically at the decision to attend college but rather focuses more generally on educational attainment. Unlike Conley, the authors do control for students' and parents' aspirations, but do not control for other factors, like the child's educational ability or achievement. Furthermore, the authors do not study interactions with race.

Lisa Keister's (2000) text on wealth spends a marginal amount of time discussing the relationship between wealth and educational attainment. Keister contends that increased education leads to higher levels of wealth, and not the other way around. While education may lead to greater levels of wealth, she is dismissive of the opposite causality. In her book, *Wealth in America: Trends in Wealth Inequality*, she presents descriptive data that quite clearly demonstrates the relationship between education and wealth. Unfortunately, she does not present the logistic regressions she has done; she mentions only that the estimates were not dissimilar from her previous estimates indicating that college graduates are approximately three times more likely than high school dropouts to (1) have wealth greater than income and (2) increase their wealth decile position.

Keister does admit that "it is possible that the education effect is really a reflection of the fact that wealthy people are more likely to be highly educated because this is the expectation for them as adolescents, they are more likely to have the resources to attend college, and they are more likely to be encouraged and have the resources to continue education beyond college" (p. 230), but claims that the use of a lagged education measure addresses this problem. Given the intergenerational mobility of income (Keister, 2000), her adjustment is insufficient.

Early in her text, Keister looks at racial and ethnic differences in the distribution of wealth and includes Asians<sup>7</sup> and Hispanics, in addition to non-Hispanic blacks and non-Hispanic whites. Unfortunately, all of her subsequent analyses collapse the racial/ethnic classifications to white and non-white.

*Conclusion.* This literature review exposes the lack of research on wealth. None of this research has looked closely at the interaction between race and wealth. The present study fills the gap by examining the role of wealth, race, and their interaction in affecting four-year college attendance.

## IV. METHODS

### A. Data

For the analysis, I have linked the National Longitudinal Study of Youth 1997 (NLSY:97) with the Integrated Postsecondary Education Data System (IPEDS).<sup>8</sup> NLSY:97 provides extensive information about wealth,

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<sup>7</sup> This category actually includes Asians and other groups not included in the following categories: non-Hispanic white, non-Hispanic black, Hispanic.

<sup>8</sup> These two data sets were matched by year such that a NLSY:97 respondent beginning college in 2003 is match to the postsecondary data from IPEDS from 2003. Since IPEDS did not begin collecting applicant, admissions, and enrollee data and SAT/ACT scores until 2001 (and it was optional until 2002), NLSY:97 respondents who applied to or

education, and upbringing for approximately 9,000 youth born between 1980 and 1984 (ages 23-27 today). Rounds one through eight of the NLSY:97 data were used; the eighth round of data was collected in 2005 and released in 2006. Available data on wealth include information on property owned, savings, investments, retirement funds, mortgages, and other loans. The surveys also include information on the student's development and resources, which will allow habitus, social capital, and cultural capital to be carefully assessed.

IPEDS is a comprehensive data set containing information on all institutions and educational organizations whose primary purpose is to provide postsecondary education. The data is collected annually and includes institution-level information on institutional characteristics (e.g. admissions criteria, student services available, tuition and fees), degree completions and graduation rates (including students receiving athletically-related aid, number completing program with 150% of normal time to completion, number transferring to other institutions), enrollments (such as proportion of full- and part-time students, racial and ethnic breakdown of campus), financial aid, institutional prices, student finances (including revenues by source and by function), graduation rates, faculty and salaries, and staff.

By linking these two data sets, a single complete datum has been created that integrates each student's background characteristics with the characteristics of any postsecondary institutions to which she may have enrolled.

### *B. The sample*

The sample used for the following analysis largely reflects the demographic characteristics reported by other national samples (see Table 1 in Appendix A for all descriptive statistics) (Kaufman, Alt, & Chapman, 2001; Wirt et al., 2005). Two-thirds of the sample are comprised of non-Hispanic white youths, 16% are non-Hispanic black youths, 13% are Hispanic youths (of any race), and 2% are Asian youths.

Three-quarters of the respondents finished schooling after receiving their high school diploma or GED, and nine percent of respondents completed college by the end of 2005.

The median income<sup>9</sup> is \$41,000 and the median wealth<sup>10</sup> is \$34,550.

### *C. Disparities in four-year college attendance rates*

While approximately one in two students (56%) did attend some type of postsecondary institution, only about one in four (27%) attended a four-year university. Moreover, students that matriculated to a four-year institution after high school were not representative of the general population; this group was disproportionately wealthy, white, and Asian.

Nearly half of students in the top wealth decile attended a four-year college, and only slightly more than one in ten of students in the bottom wealth decile attended a four-year college (see Figure 2).

Students in the top wealth deciles were more than four times as likely to attend a four-year college as their first postsecondary institution than students in the bottom wealth decile.

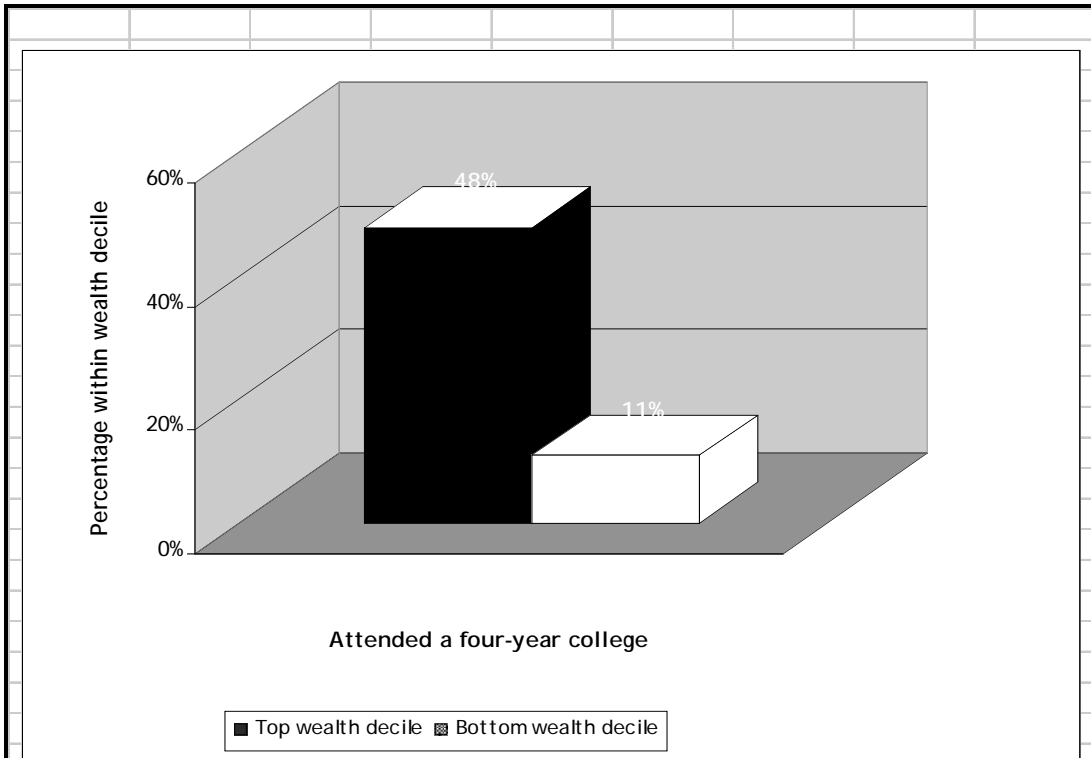
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enrolled into a postsecondary institutions before 2002 use IPEDS 2002 data. NLSY:97 respondents who applied to or enrolled in a postsecondary institution in 2002 or later are matched with the corresponding year in the IPEDS data.

<sup>9</sup> Median income is averaged from family income over the students' years in high school.

<sup>10</sup> Median wealth is based on parents' reported family wealth in the first round of surveys in 1997.

Figure 2. Comparison of top and bottom wealth decile's four-year college attendance rates.



Source: National Longitudinal Study of Youth (1997); N=8984

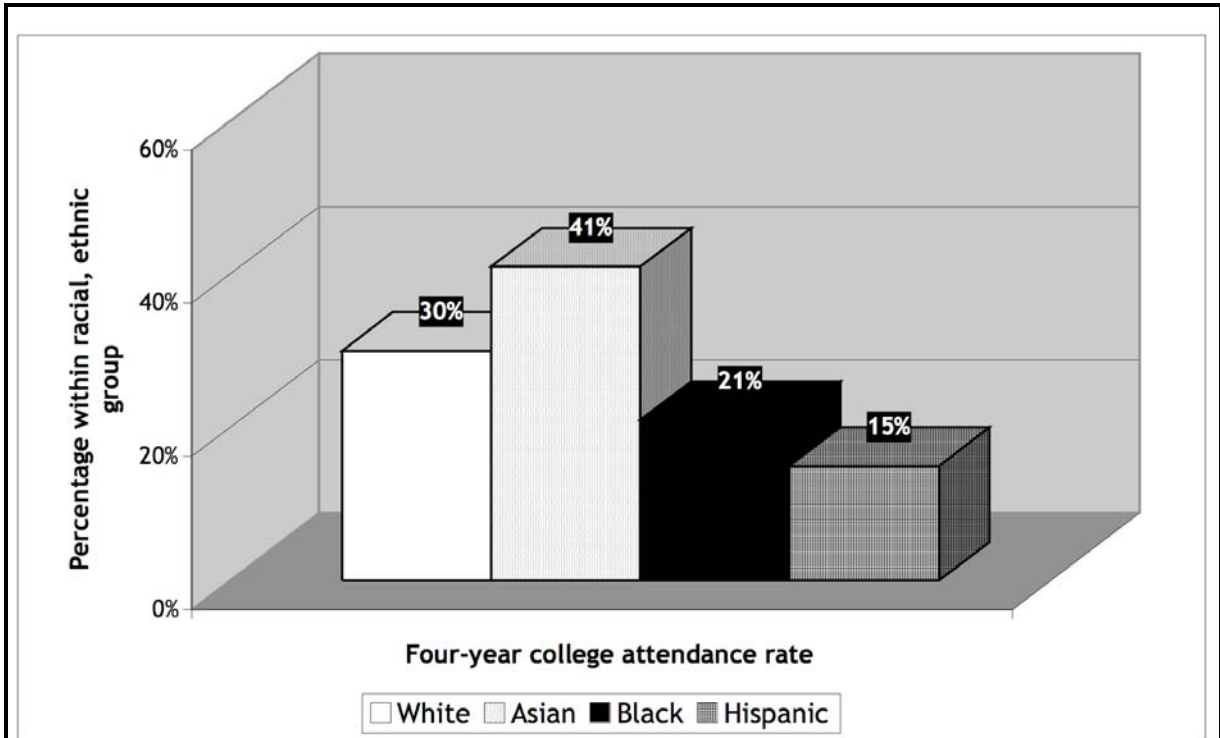
Estimates of sample composition were made using an NLSY:97 custom weight, which adjusts sampling design and the use of data from more than one round of surveying.

Multiple imputation was used to adjust for missing data.

Robust standard errors, adjusted for clustering, are used.

Not only do wealth disparities exist, racial and ethnic differences persist among students attending four-year colleges (see Figure 3). Forty-one percent of Asian students attended a four-year college, which is approximately twice the figure for black students. White students will attend a four-year college at a rate of 30%, which is twice the figure for Hispanic students.

Figure 3. Four-year college attendance rates by race, ethnicity.



Source: National Longitudinal Study of Youth (1997); N=8984

Estimates of sample composition were made using an NLSY:97 custom weight, which adjusts sampling design and the use of data from more than one round of surveying.

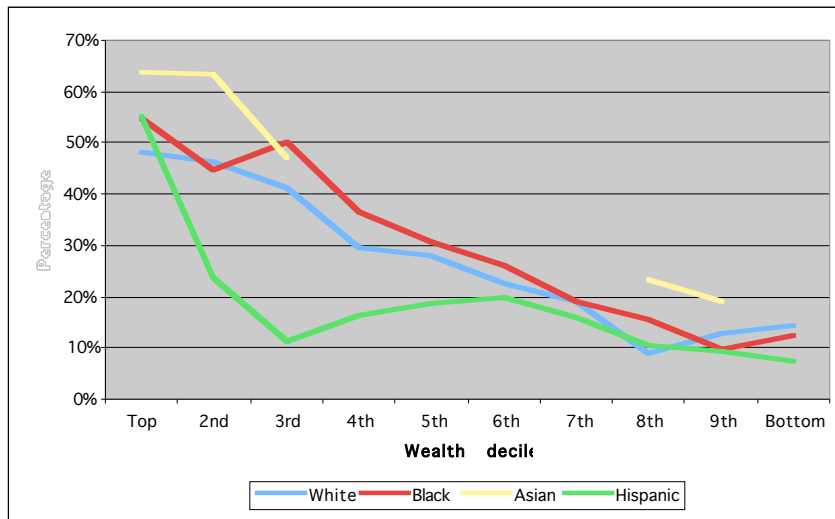
Multiple imputation was used to adjust for missing data.

Robust standard errors, adjusted for clustering, are used.

When looking at four-year college attendance rates broken down by wealth decile *within* racial, ethnic category, a different story emerges (see Figure 4). The pattern of whites and Asians is no longer very dissimilar than that of blacks. Hispanic students, however, do show a different pattern in certain wealth deciles. While Hispanic students in the top wealth decile, like their wealthy non-Hispanic counterparts, attended four-year colleges at high rates, the four-year college attendance rates for Hispanic students in the second highest wealth decile dropped significantly lower than similarly wealthy non-Hispanic students. Only at the sixth wealth decile does Hispanic students' four-year college attendance rate again become similar to that of non-Hispanic students. All racial and ethnic groups have similar four-year college attendance rates for the seventh through bottom wealth deciles.



Figure 4. Four-year college attendance rate by race, ethnicity and wealth decile



The pattern emerging from the data indicates that the racial disparities seen in four-year college attendance may stem from racial and ethnic differences in the distribution of wealth. The next section will further analyze the relationship between wealth, race, and four-year college attendance.

*D. Methodology*

Binary logistic regression is used to evaluate whether a student attended a four-year college on wealth, habitus, social capital, cultural capital, and other background variables. Different specifications are utilized to see how the addition of wealth alters the estimates of the coefficients for different ethnic and racial groups and how habitus, social capital, and cultural capital alter the coefficient estimates for wealth. As laid out in the conceptual framework, it is hypothesized that much of wealth's influence plays out through habitus, social capital, and cultural capital. Thus, it is predicted that wealth's regression coefficient will become less significant when habitus, social capital, and cultural capital are added to the model.

To study this process, this study utilizes a series of six logistic regressions:

	First set		Second set		Third set	
Independent variables		+ wealth		+ wealth		+ wealth
Race, ethnicity	√	√	√	√	√	√
Gender	√	√	√	√	√	√
No. of children in home	√	√	√	√	√	√
Income	√	√	√	√	√	√
<b>Wealth</b>		√		√		√
Academic preparation <sup>11</sup>			√	√	√	√
<b>Habitus, social capital, cultural capital</b>					√	√

<sup>11</sup> Academic preparation is measured by the student's computed composite ASVAB test score. The variable used in this study is a composite of four academic subject areas: mathematical knowledge, arithmetic reasoning, word knowledge, and paragraph comprehension. This score is a computed percentile score of these four subject areas.

These six specifications can be thought of as three nested sets of two specifications – one specification excluding wealth as an independent variable, with and without including wealth as an independent variable.

The first set of logistic regressions includes only the most basic of controls – race and ethnicity, gender, number of children in the home, family income, and wealth (in one of the two specifications of the set).

The second set of logistic regressions includes a measure of academic preparation in addition to those in the first set. From this model, we will be able to discern the role of wealth in contributing to a student's academic preparation.

The third, and final, set of logistic regressions includes measures of habitus, social capital, and cultural capital, in addition to the independent variables in the first and second sets. As posited in the conceptual framework, this final specification will test the hypothesis of wealth's role in affecting four-year college attendance as working largely through a student's habitus, social capital, and cultural capital.

## V. RESULTS

*Summary.* Students from families with greater wealth are statistically significantly more likely to attend a four-year college than their less wealthy counterparts until controls for academic achievement and, later, habitus, social capital, and cultural capital are included (see Appendix A.1. for table of odds ratios<sup>12</sup>), indicating that the wealth gap in four-year college attendance stems from its contribution to academic achievement, habitus, social capital, and cultural capital.

Looking at race and ethnicity, black and Asian students are not significantly different than white students in any of the specifications, which indicates that racial differences between white, black, and Asian students likely stem not from race itself but from other background traits related to race.

Hispanic students are not significantly different than white students in the first two specifications where only the most basic controls are included. When academic achievement is included in specification three, Hispanic students become more likely than their white peers to attend a four-year college. This advantage grows slightly when wealth is added in specification four. However, the increased likelihood of Hispanic students relative to white students dissipates with the introduction of habitus, social capital, and cultural capital. This indicates that Hispanic students are disproportionately more likely to have lower levels of academic achievement and, to a lesser extent, educationally-valuable habitus, social capital, and cultural capital than their white student counterparts.

*Wealth.* When only controlling for the most basic of background variables, as done in the first set of logistic regressions, an increase in wealth of one thousand dollars relates to the odds of attending a four-year

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<sup>12</sup> The logistic regression results are described as odds ratios. Odds ratios are often confused with probabilities. Note that odds ratios are the odds of one group divided the odds of another group (as compared to relative risk or probabilities, which divides the number in the group by the total number of subjects both in the group and not). Specifically for this study, the odds ratio is the change in odds of being in dependent variable group (e.g. attended college) relative to not being in that dependent variable group (e.g. did not attend college) related to a change of one unit in the associated independent variable. Odds ratios greater than one indicate an increase in the likelihood (depending on which analysis, of applying to college, attending college, or attending a certain type of college), while odds ratios less than one indicate a decrease in the likelihood. To get to probabilities from odds ratios, simply dividing the given odds ratio by the odds ratio plus one (e.g. an odds ratio of 3 can be changed to a probability by dividing 3 by (3+1) – a probability of 0.75 or 75%).

college increasing by a factor of 1.0002 – significant but negligible. The significance of wealth is eliminated with the addition of academic achievement and remains to be the case with the further addition of habitus, social capital, and cultural capital. These data indicate that while wealthier students attend four-year college at higher rates than their less wealthy counterparts, this advantage stems from their higher levels of academic achievement.

*Race and ethnicity.* The different specifications make racial and ethnic differences in attending four-year college apparent. While black and Asian students are never significantly different than white students, Hispanic students display an unusual trend. Hispanic students are initially as likely as white students to attend a four-year college, but when a control for academic achievement is added, Hispanic students become more likely to attend a four-year college than their white counterparts. This result highlights the impact of lower academic achievement levels on four-year college attendance for Hispanic students. Interestingly, when controls for habitus, social capital, and cultural capital are added, Hispanic students are no longer significantly more likely to attend a four-year college than white students. This indicates that the variables used to operationalize habitus, social capital, and cultural capital actually inhibit Hispanic students' four-year college attendance relative to white students'.

To look more closely at the role of wealth and race in attendance of four-year colleges, separate binary logistic regressions were run for each racial and ethnic group (see Appendix A.2.a-d for relevant table of odds ratios). Within racial and ethnic groups, no wealth advantage exists in any of the specifications, indicating that within these groups, wealthier students do not attend four-year colleges at a higher rate (once controlling for background characteristics).

### *Conclusions*

These results indicate that wealth's significance lies largely in its promotion of higher levels of academic achievement. Moreover, racial and ethnic differences in four-year college attendance are largely eliminated with even just the most basic of controls.

## **VI. IMPLICATIONS FOR POLICY**

This research highlights vast disparities in access to four-year colleges across racial and ethnic groups and by levels of family wealth, finding that many of these disparities stem from large inequalities in the distribution in wealth. These inequalities affect students' academic preparation, habitus, social capital, and cultural capital, which, in turn, affect students' college-going processes. These findings should be exciting for those in educational policy – our ability to affect students' achievement is much more in our reach than changing the asset accumulation of students' families.

### *Implications for K-12*

Much research on college access focuses on the role that postsecondary institutions play, but this research indicates that college admissions and financial aid officers are not the only (or even main) gatekeepers and that much of the disparities in college access develop long before students graduate from high school. In order to address these disparities adequately, policy-makers must also look closely at what K-12 institutions are doing to support and/or discourage a college-going culture.

K-12 institutions can reduce disparities in college-going rates first by supporting and building in lower wealth and racial, ethnic minorities' higher levels of academic achievement that wealthier majority groups are privileged to and utilize in attaining higher rates of four-year college attendance. Next steps for research would be analyze the relationship between wealth and academic achievement – is it resultant of wealthier families being able to locate to areas with strong schools, having a unique emphasis on educational

excellence, and/or being able to supplement formal educational structures with additional educational support?

K-12 institutions need to be sensitive to how they encourage and discourage certain behaviors, attitudes, and dispositions. Research indicates that teachers and counselors react and support different students differently; families and peer groups differentiate in their expectations and ability to promote affect students' college-going processes (McDonough, 1997). As such, elementary and secondary schools must look critically at how their actions affect students' thoughts and actions with regards to pursuing post-secondary educations. These actions affect the previously discussed relationship to academic achievement, but also relates to the differential impact of students' habitus, social capital, and cultural capital based on their family wealth.

#### *Implications for postsecondary institutions*

Postsecondary institutions need to analyze the practices they employ that may support certain groups and discourage others. How do current admissions policies advantage the attributes of students from wealthier families? How do current outreach and marketing favor wealthier students? Are financial aid efforts reaching the students who most need financial assistance to attend college the most?

#### *Aligning K-12 and post-secondary institutions*

To better attract students who are absent from their rolls, postsecondary institutions need to work closely with K-12 institutions in aligning their policies so as to enable students to execute the educational expectations they demonstrate earlier in their educational careers. Institutions of higher education must provide K-12 teachers and administrators, students, and their families with knowledge as to what is required of students to succeed in the application process and in college more generally, as the data shows that academic preparation is the key to successfully closing the race, and thus the wealth, gap. They must then work to ensure that processes and structures are institutionalized to support a frictionless pathway to higher education for a broader range of groups.

K-12 institutions must also examine the effectiveness of their systems of delivery so as to ensure that students with different levels of habitus are able to fully exploit their academic potential. It bears repeating that institutions of higher education must ensure that their requirements are not unduly biased against students with less traditional backgrounds – those students whose lack of family wealth has affected the educational resources available to them and the quality of educations offered to them.

VII. APPENDICES

A. *Univariate and descriptive statistics*

Table 1. Sample composition.

Demographic characteristics of sample (NLSY:97)				
	Percent of sample	SE	95% confidence interval	
<i>Race and ethnicity</i>				
Non-Hispanic white	68%	0.02	28%	36%
Non-Hispanic black	16%	0.01	13%	18%
Non-Hispanic Asian	2%	0.01	1%	4%
Hispanic (of any race)	13%	0.01	10%	16%
<i>Age (as of 12/31/96)</i>				
12	20%	0.00	19%	21%
13	19%	0.00	19%	20%
14	20%	0.00	19%	21%
15	20%	0.00	19%	21%
16	20%	0.00	19%	21%
<i>Highest educational attainment</i>				
None	12%	0.01	11%	13%
GED	5%	0.00	5%	6%
High school diploma	70%	0.01	68%	72%
Associate's degree	4%	0.00	4%	5%
Bachelor's degree	9%	0.01	7%	10%
Master's degree	0.2%	0.00	--	--
Professional degree	0.02%	0.00	--	--
PhD	0.02%	0.00	--	--
N=8984				
Note: Due to the large size of the standard errors (as compared to the size of the estimated percent) for master's, professional, and PhD degrees in educational attainment, 95% confidence interval estimates are not meaningful				
Estimates of sample composition were made using an NLSY:97 custom weight, which adjusts sampling design and the use of data from more than one round of surveying.				
Multiple imputation was used to adjust for missing data				
Robust standard errors, adjusted for clustering, are used				

Table 2. Descriptive statistics.

Descriptive statistics of NLSY:97 sample				
	Mean	SE	95% confidence interval	
Family wealth <sup>a</sup>	\$34,550	--	--	--
Family income <sup>a</sup>	\$41,000	--	--	--
Parental education (years of schooling)	13.7	0.10	13.5	13.9
Percent of peers that plan to attend college	65%	0.67	64%	66%
Number of students per teacher	15.3	0.25	14.8	15.8
Chance of completing 4-year college by the age of 30 (according to student)	75%	0.84	73%	76%
Chance of completing 4-year college by the age of 30 (according to parent)	70%	0.85	68%	71%
Percent of students that have a quiet area at home	95%	0.00	94%	95%
ASVAB score	48.7	0.77	47.2	50.2
Attended a four-year college	27%	0.01	25%	29%
<i>How much parents know about school activities</i>				
Knows nothing	1%	0.00	1%	1%
Knows just a little	3%	0.01	1%	4%
Knows some things	11%	0.00	10%	12%
Knows most things	35%	0.01	33%	36%
Knows everything	51%	0.01	49%	53%
<i>Curriculum/type of secondary school attended</i>				
Public school	91%	0.01	89%	92%
Technical or vocational school	1.0%	0.00	0.6%	1.3%
Catholic school	3.8%	0.01	2.6%	5.0%
Private, religious (non-Catholic) school	2.4%	0.00	1.8%	3.0%
Private, secular school	1.0%	0.00	0.6%	1.4%
Alternative school	0.9%	0.00	0.7%	1.2%
Home school	0.2%	0.00	--	--
Special education	0.01%	0.00	--	--
Other	0.1%	0.00	--	--
N=8984				
a Median is reported in the mean column				
Median income is averaged from family income over the students' years in high school. Median wealth is based on parents' reported family wealth in the first round of surveys in 1997.				
Standard errors for the median values of family wealth and income were not reported because of the difficulty of correctly estimating them given the complex sampling design of the survey.				
Due to the large size of the standard errors (as compared to the size of the estimated percent) for home school, special education, and other in curriculum/type of secondary school attended, 95% confidence interval estimates are not meaningful.				
Descriptive statistics were made using an NLSY:97 custom weight, which adjusts sampling design and the use of data from more than one round of surveying.				
Multiple imputation was used to adjust for missing data.				
Robust standard errors, adjusted for clustering, are used.				

Table 3. Four-year college attendance by race and wealth.

	Mean	SE	95% confidence interval	
<i>Attended a four-year college</i>	<i>27%</i>	<i>0.01</i>	<i>0.25</i>	<i>0.29</i>
Non-Hispanic white	30%	0.01	0.28	0.33
Top	48%	0.03	0.42	0.54
2nd	46%	0.03	0.41	0.52
3rd	41%	0.03	0.35	0.48
4th	29%	0.03	0.24	0.35
5th	28%	0.03	0.22	0.34
6th	22%	0.02	0.18	0.27
7th	19%	0.02	0.15	0.24
8th	9%	0.02	0.05	0.13
9th	13%	0.03	0.07	0.19
Bottom	14%	0.02	0.10	0.19
Non-Hispanic black	21%	0.01	0.18	0.24
Top	55%	0.14	0.27	0.82
2nd	45%	0.10	0.26	0.64
3rd	50%	0.07	0.36	0.65
4th	36%	0.05	0.26	0.47
5th	31%	0.06	0.19	0.42
6th	26%	0.04	0.18	0.34
7th	19%	0.03	0.13	0.25
8th	16%	0.02	0.11	0.20
9th	10%	0.02	0.06	0.13
Bottom	12%	0.02	0.08	0.17
Non-Hispanic Asian	41%	0.06	0.29	0.52
Top	64%	0.09	0.46	0.81
2nd	63%	0.16	0.32	0.95
3rd	47%	0.15	0.17	0.77
4th	0%	--	--	--
5th	0%	--	--	--
6th	32%	0.23	-0.14	0.77
7th	0%	--	--	--
8th	23%	0.18	-0.13	0.59
9th	19%	0.19	-0.18	0.56
Bottom	0%	--	--	--
Hispanic (of any race)	15%	0.01	0.12	0.17
Top	55%	0.09	0.37	0.73
2nd	24%	0.07	0.10	0.37
3rd	11%	0.05	0.02	0.21
4th	17%	0.04	0.09	0.24
5th	18%	0.04	0.10	0.27
6th	20%	0.05	0.11	0.29
7th	16%	0.03	0.09	0.22
8th	11%	0.02	0.06	0.15
9th	9%	0.02	0.05	0.13
Bottom	7%	0.02	0.03	0.11

N=8984

Variables without SE and confidence intervals reported lacked variation and/or had a sample size too small to make meaningful inferences.

Descriptive statistics were made using an NLSY:97 custom weight, which adjusts sampling design and the use of data from more than one round of surveying.

Multiple imputation was used to adjust for missing data.

Robust standard errors, adjusted for clustering, are used.

*B. Who attends four-year colleges*

*1. All groups together*

Table 4. Binary logistic regression odds ratios: attended a four-year college.

Background	(1)	(2)	(3)	(4)	(5)	(6)
Black (non-Hispanic)	0.923 (0.09)	0.941 (0.10)	1.149 (0.12)	1.156 (0.12)	1.042 (0.11)	1.046 (0.11)
Asian (non-Hispanic)	1.203 (0.29)	1.178 (0.28)	1.153 (0.29)	1.138 (0.29)	0.990 (0.22)	0.982 (0.22)
Hispanic (any race)	1.144 (0.12)	1.1679 (0.12)	1.3755** (0.14)	1.3862** (0.15)	1.1867 (0.14)	1.1892 (0.14)
Female	1.3743*** (0.11)	1.3734*** (0.11)	1.3367*** (0.11)	1.3374*** (0.11)	1.2350** (0.10)	1.2359** (0.10)
Number of kids (under 18) in home	0.7147*** (0.04)	0.7212*** (0.04)	0.7475*** (0.04)	0.7508*** (0.04)	0.7758*** (0.04)	0.7781*** (0.04)
Square root of household income (\$000)	1.0492*** (0.01)	1.0430** (0.01)	1.0338** (0.01)	1.0305* (0.01)	1.0229 (0.01)	1.0208 (0.01)
Household wealth (\$000)		1.0002* (0.00)		1.0001 (0.00)		1.0001 (0.00)
Achievement (ASVAB)			1.0113*** (0.00)	1.0110*** (0.00)	1.0073*** (0.00)	1.0072*** (0.00)
<b>Habitus</b>						
Expectation of completing college					1.0156*** (0.00)	1.0155*** (0.00)
Parents' education					(0.99) (0.02)	(0.99) (0.02)
Quiet area at home (yes = 1; no = 0)					0.9688 (0.15)	0.971 (0.15)
<b>Social capital</b>						
Percent of peers that plan to attend college					0.997 (0.00)	0.9969 (0.00)
Number of students per teacher					1.0318* (0.01)	1.0318* (0.01)
<b>Cultural capital</b>						
Parents' knowledge of school activities					0.9843 (0.08)	0.9845 (0.08)
Technical or vocational school					0.7648 (0.25)	0.7677 (0.25)
Catholic school					1.2141 (0.23)	1.2103 (0.23)
Private, religious non-Catholic school					1.8498* (0.49)	1.8332* (0.48)
Private, secular school					0.4815 (0.23)	0.4725 (0.22)
Home school					0.5488 (0.60)	0.5579 (0.61)
Other school					0.6342 (0.34)	0.6365 (0.34)
BIC	7,099.0	7,099.2	7,014.8	7,020.6	6,936.3	6,943.3

N = 8984  
 Racial, ethnic reference category is white (non-Hispanic).  
 Other school type includes special education and alternative schools.  
 Robust standard errors adjusted for clustering in parentheses.



2. By racial, ethnic group

a. Non-Hispanic whites

Table 5. Binary logistic regression odds ratios: whites: attended a four-year college.

Background	(1)	(2)	(3)	(4)	(5)	(6)
Female	1.4034*** (0.14)	1.4022*** (0.14)	1.3721** (0.14)	1.3726** (0.14)	1.2597* (0.12)	1.2606* (0.12)
Number of kids (under 18) in home	0.6646*** (0.05)	0.6722*** (0.05)	0.6874*** (0.05)	0.6918*** (0.05)	0.7105*** (0.05)	0.7141*** (0.05)
Square root of household income (\$000)	1.0508*** (0.01)	1.0439** (0.02)	1.0361* (0.02)	1.032 (0.02)	1.0253 (0.02)	1.0226 (0.02)
Household wealth (\$000)		1.0002 (0.00)		1.0001 (0.00)		1.0001 (0.00)
Achievement (ASVAB)			1.0112*** (0.00)	1.0109*** (0.00)	1.0072** (0.00)	1.0071** (0.00)
<b>Habitus</b>						
Expectation of completing college					1.0153*** (0.00)	1.0153*** (0.00)
Parents' education					0.983 (0.02)	0.98 (0.02)
Quiet area at home (yes = 1; no = 0)					1.0565 (0.19)	1.0606 (0.19)
<b>Social capital</b>						
Percent of peers that plan to attend college					0.9973 (0.00)	0.9972 (0.00)
Number of students per teacher					1.0315 (0.02)	1.0313 (0.02)
<b>Cultural capital</b>						
Parents' knowledge of school activities					0.9578 (0.08)	0.958 (0.08)
Technical or vocational school					0.5684 (0.27)	0.5712 (0.27)
Catholic school					1.247 (0.28)	1.2414 (0.28)
Private, religious non-Catholic school					2.0736** (0.57)	2.0502** (0.56)
Private, secular school					0.537 (0.28)	0.5242 (0.27)
Other school					0.8971 (0.62)	0.9047 (0.62)
BIC	3,667.0	3,670.0	3,627.3	3,633.3	3,624.7	3,631.6
N = 4485 Other school type includes special education, alternative, and home schools. Robust standard errors adjusted for clustering in parentheses.						

b. Non-Hispanic blacks

Table 6. Binary logistic regression odds ratios: blacks: attended a four-year college.

Background	(1)	(2)	(3)	(4)	(5)	(6)
Female	1.4752* (0.23)	1.4747* (0.23)	1.3727* (0.22)	1.3735* (0.22)	1.2843 (0.21)	1.2846 (0.21)
Number of kids (under 18) in home	0.7458*** (0.06)	0.7475*** (0.07)	0.7958** (0.07)	0.7947** (0.07)	0.8364* (0.07)	0.8354* (0.07)
Square root of household income (\$000)	1.0633* (0.03)	1.0629* (0.03)	1.0446 (0.03)	1.0459 (0.03)	1.0356 (0.03)	1.0371 (0.03)
Household wealth (\$000)		1.0001 (0.00)		0.9999 (0.00)		0.9998 (0.00)
Achievement (ASVAB)			1.0125*** (0.00)	1.0126*** (0.00)	1.0094** (0.00)	1.0095** (0.00)
<b>Habitus</b>						
Expectation of completing college					1.0134** (0.00)	1.0134** (0.00)
Parents' education					1.0187 (0.04)	1.0224 (0.05)
Quiet area at home (yes = 1; no = 0)					0.8896 (0.24)	0.8872 (0.24)
<b>Social capital</b>						
Percent of peers that plan to attend college					0.9958 (0.00)	0.9959 (0.00)
Number of students per teacher					1.0383 (0.02)	1.0385 (0.02)
<b>Cultural capital</b>						
Parents' knowledge of school activities					1.0146 (0.14)	1.0147 (0.14)
Technical or vocational school					1.4206 (0.71)	1.4208 (0.71)
Catholic school					0.6572 (0.42)	0.6639 (0.43)
Private, religious non-Catholic school					1.2183 (0.76)	1.2206 (0.78)
Other school					0.2863 (0.28)	0.2877 (0.28)
<b>BIC</b>	1,649.6	1,656.7	1,633.9	1,640.9	1,665.5	1,672.4
N = 2370						
Other school type includes education, alternative, home, and private, secular schools.						
Robust standard errors adjusted for clustering in parentheses.						

c. Non-Hispanic Asians

Table 7. Binary logistic regression odds ratios: Asians: attended a four-year college.

Background	(1)	(2)	(3)	(4)	(5)	(6)
Female	1.8084 (0.82)	1.8315 (0.84)	1.8142 (0.80)	1.8316 (0.83)	1.459 (0.68)	1.4705 (0.70)
Number of kids (under 18) in home	0.9999 (0.21)	1.0144 (0.21)	1.0176 (0.21)	1.0232 (0.21)	1.0606 (0.21)	1.0612 (0.21)
Square root of household income (\$000)	0.9081 (0.08)	0.8997 (0.08)	0.9047 (0.08)	0.8987 (0.08)	0.9338 (0.07)	0.9267 (0.07)
Household wealth (\$000)		1.0002 (0.00)		1.0002 (0.00)		1.0003 (0.00)
Achievement (ASVAB)			1.0024 (0.01)	1.0012 (0.01)	1.0027 (0.01)	1.0018 (0.01)
<b>Habitus</b>						
Expectation of completing college					1.0172 (0.02)	1.0176 (0.02)
Parents' education					0.9563 (0.07)	0.9495 (0.07)
<b>Social capital</b>						
Percent of peers that plan to attend college					0.984 (0.01)	0.9836 (0.01)
Number of students per teacher					1.0003 (0.07)	1.0046 (0.07)
<b>Cultural capital</b>						
Parents' knowledge of school activities					1.0105 (0.38)	1.0042 (0.39)
BIC	155.1	159.3	159.8	164.1	178.4	182.6
N = 162 Other school type includes special education, alternative, and home schools. Eliminated curriculum type, as approximately 95% of Asians attend public school. Eliminated the indicator variable of whether students had a quiet area for study at home, as about 98% of Asians had. Robust standard errors adjusted for clustering in parentheses.						

d. Hispanics (of any race)

Table 8. Binary logistic regression odds ratios: Hispanics: attended a four-year college.

Background	(1)	(2)	(3)	(4)	(5)	(6)
Female	1.1904 (0.18)	1.1904 (0.18)	1.1448 (0.18)	1.1454 (0.18)	1.065 (0.16)	1.0664 (0.16)
Number of kids (under 18) in home	0.8168* (0.08)	0.8223* (0.08)	0.8832 (0.09)	0.8837 (0.09)	0.9282 (0.11)	0.9279 (0.11)
Square root of household income (\$000)	1.0748* (0.04)	1.0671 (0.04)	1.0573 (0.04)	1.0552 (0.04)	1.0459 (0.04)	1.0451 (0.04)
Household wealth (\$000)		1.0003 (0.00)		1.0001 (0.00)		1.0000 (0.00)
Achievement (ASVAB)			1.0134*** (0.00)	1.0132*** (0.00)	1.0078* (0.00)	1.0077* (0.00)
<b>Habitus</b>						
Expectation of completing college					1.0191*** (0.00)	1.0191*** (0.00)
Parents' education					1.0246 (0.03)	1.024 (0.03)
Quiet area at home (yes = 1; no = 0)					0.9531 (0.37)	0.9527 (0.37)
<b>Social capital</b>						
Percent of peers that plan to attend college					0.9992 (0.00)	0.9992 (0.00)
Number of students per teacher					1.0403 (0.03)	1.0405 (0.03)
<b>Cultural capital</b>						
Parents' knowledge of school activities					1.096 (0.14)	1.097 (0.14)
Technical or vocational school					0.5515 (0.47)	0.552 (0.47)
Catholic school					1.1599 (0.51)	1.1612 (0.51)
Private, religious non-Catholic school					0.7858 (0.60)	0.7875 (0.60)
Private, secular school					0.7025 (0.79)	0.7034 (0.79)
Other school					0.2447 (0.27)	0.244 (0.27)
BIC	1,512.3	1,517.2	1,490.4	1,497.5	1,503.9	1,511.1
N = 1923 Other school type includes special education, alternative, and home schools. Robust standard errors adjusted for clustering in parentheses.						

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