An Empirical Analysis of 'Acting White'*

Roland G. Fryer, Jr.
Robert M. Beren Professor of Economics
Harvard University and NBER

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Abstract

Using a newly available data set, which allows one to construct a novel measure of a student's social status, we demonstrate that there are potentially important racial differences in the relationship between social status and academic achievement. The effect is intensified among students with a grade point average (GPA) of 3.5 or higher and those in schools with more interracial contact. Earlier studies showing a positive relationship between popularity and academic achievement for blacks are sensitive to the inclusion of more continuous achievement measures. We argue that the data are most consistent with a model of 'acting white' in which investments in education are taken as a signal of one's opportunity costs of peer-group loyalty, though imprecise estimates make definitive conclusions difficult.

"Go into any inner city neighborhood, and folks will tell you that government alone can't teach kids to learn. They know that parents have to parent, that children can't achieve unless we raise their expectations and turn off the television sets and eradicate the slander that says a black youth with a book is acting white."

Senator Barack Obama, 2004 Democratic National Convention Keynote Address

I. Introduction

The racial achievement gap in education is a vexing reality. Black children enter kindergarten lagging whites, and these differences grow throughout their school years.[1] On every subject, at every grade level, there are large achievement differences between blacks and whites (Campbell, Hombo, and Mazzeo 2000, Neal 2004). The typical black seventeen-year-old reads at the proficiency level of the typical white thirteen-year-old (Campbell, Hombo, and Mazzeo 2000). On the Scholastic Aptitude Test, black college-goers score, on average, more than one standard deviation below white college-goers (Card and Rothstein 2004). Even in affluent neighborhoods, the racial divide is daunting (Ferguson 2001, 2002, Ogbu and Davis 2003). Accounting for a host of background factors, the achievement gap remains essentially unchanged (Jencks and Phillips 1998).

A wide variety of possible explanations for the test-score gap have been put forth. These explanations include differences in genetics (Hernstein and Murray 1994, Jensen 1998), differences in family structure and poverty (Armor 1992, Brooks-Gunn and Duncan 1997), differences in school quality (Cook and Evans 2000), racial bias in testing or teachers' perceptions (Delpit 1995, Ferguson 1998A, Rodgers and Spriggs 1996), and differences in peer culture, socialization, or behavior (Austen-Smith and Fryer 2005, Cook and Ludwig 1997, Fordham and Ogbu 1986, Steele and Aronson 1998). The appropriate public policy choice to address the achievement gap may depend critically on its underlying source.

In this paper, we focus on a highly controversial and well-publicized aspect of black peer interaction – the existence of a peer externality commonly referred to as 'acting white.'[2] 'Acting white'

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[1] This fact was first established by Coleman et al. (1966). For more recent analysis, see Campbell, Hombo, and Mazzeo (2000), Carneiro and Heckman (2002), Fryer and Levitt (2004, 2005), Neal (2004), or Phillips, Crouse, and Ralph (1998).

[2] It is imperative to note that there is nothing unique about black culture in this regard. A version of 'acting white' is also prevalent in ethnographies involving the Buraku Outcastes of Japan (DeVos and Wagatsuma 1966), Italian immigrants in Boston's West End (Gans 1962), the Maori of New Zealand (Chapple, Jefferies, and Walker 1997), and the working class in Britain (Willis 1977), among others. In all cases high-achievers receive a derogatory label from their peer group. For example, in the peer-group society documented in Gans (1962), upwardly mobile youth interested in education were labeled "mobiles" and "sissies." See Fryer (2007) for a detailed discussion of these groups. Furthermore, we examine Hispanics in addition to blacks throughout this paper.

describes a set of social interactions in which some minorities incur costs for investing in behaviors characteristic of whites (e.g., raising their hand in class, making good grades, or having an interest in ballet).[3] A primary obstacle to the study of 'acting white' has been the lack of quantitative measures of the phenomenon. We focus on racial differences in the relationship between *social status* and *academic achievement*: our (albeit, narrow) definition of 'acting white'.

To circumvent some of the problems inherent in self-reported popularity measures, we construct our own index of social status. For each student the index measures the number of same-race friends within her school, weighted by the social status of each friend (results are unaltered if we use all friends). We implement the index using detailed information on friendship networks within schools available in the National Longitudinal Study of Adolescent Health (Add Health). Add Health is, in many respects, the ideal data for understanding the existence of 'acting white.' To our knowledge, it is the only available data set that contains within-school friendship networks from which it is possible to construct *novel, and arguably more objective,* measures of social status, along with detailed data on parental characteristics, academic achievement, and so forth. The survey covers a sample of more than 90,000 junior-high and high-school students from 175 schools in 80 communities around the US.

Our empirical analysis of 'acting white' uncovers a rich set of new facts. In stark contrast to the previous literature (Ainsworth-Darnell and Downey 1998, Cook and Ludwig 1997), Figure 1A demonstrates that there are racial differences in the relationship between social status and academic achievement. Among whites, higher grades are associated with higher social status. For blacks, higher achievement is associated with modestly higher social status until a grade point average of 3.48, when the slope turns negative. A black student with a 4.0 grade point average has, on average, 1.5 fewer same-race friends than a white student with a 4.0. Among Hispanics, there is little change in social status from a grade point average of 1 through 2.5. After 2.5, the gradient turns sharply negative. A Hispanic student with a 4.0 grade point average is the least popular of all Hispanic students, and has 3 fewer friends than a typical white student with a 4.0 grade point average. Put differently, evaluated at the sample mean, a one-standard-deviation increase in grades is associated with roughly a .103-standard-deviation decrease in social status for blacks and a .171-standard-deviation decrease for Hispanics. For students with a 3.5 out of 4.0 grade point average or better, the magnitude of the racial difference is three times as large. It is imperative to note at the outset that the majority of black and Hispanic students earn GPAs between 2.0 and 3.0, where racial differences in the relationship between social status and academic achievement exist only for Hispanics.

We caution against a causal interpretation of the coefficients on the covariates, which we view as proxies for a broad set of environmental and behavioral factors. Even our main parameter is not void of

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[3] There are many working definitions of 'acting white' which we discuss in Section II.

the potential for reverse causality. We implicitly assume that high achievement causes lower social status; it is plausible that low social status causes high grades. We failed to find a plausible instrument for a student's academic achievement, but were mildly successful at finding a way to vary popularity in ways that may not affect grades: interviewer ratings of physical attractiveness for each student. If we think that a regression of popularity on grades gives a significant coefficient either because of simultaneity and/or omitted variables, we can write it as a two-equation system. Then, if we have a valid instrument for the second equation (where grades are the dependent variable), it gives a more valid estimate of the causal effect of popularity on grades (Wooldridge, 2002). Instrumenting for popularity using attractiveness has a strong first stage, but there are no racial differences in the effect on grades, suggesting that the causality arrow points in the assumed direction (grades cause popularity).

Racial differences in the relationship between social status and achievement are robust across many alternative empirical models, subsets of the data, and definitions of both social status and academic achievement. Estimating a fully interacted model does not alter the results. The 'acting white' effect differs slightly as children age. For black students in junior high school (grades 7-9) a one-standard-deviation increase in grades is associated with a .13 standard-deviation decrease in social status; the decrease is .07 for high-school students. Accounting for the number of students at each GPA level does little to temper the 'acting white' effect, suggesting that the supply of potential friends does not explain the phenomenon. Self-selection of students into particular activities (sports, band, debate, etc.) matters little, and substitution towards other-race friendships does not fully explain the stark difference in the social status-achievement gradient. Using alternative measures of academic achievement confirms our results.

We argue that the empirical patterns are most consistent with a simple model of peer pressure. The principal idea is that individuals face a two-audience signaling quandary: signals that beget labor-market success are signals that induce peer rejection. The model's two distinguishing predictions – racial differences in the relationship between peer-group acceptance and academic achievement will exist and these differences will be exacerbated in arenas that foster more interracial contact or increased mobility – are borne out in the data. Other models we consider, such as self-sabotage among black youth or the presence of an oppositional culture identity, fit much of the data, but are inconsistent with the fact that racial differences in the relationship between social status and academic achievement are larger in predominantly white schools relative to predominantly black ones.

The remainder of the paper is structured as follows. Section II provides a brief review of the literature on 'acting white.' Section III describes and summarizes the data used in the analysis. Section IV provides a derivation of our measure of social status along with a constructive example. Section V estimates the relationship between social status and academic achievement among racial groups. Section

VI reconciles our results with the previous literature on 'acting white.' Section VII uses economic and social theory to interpret the set of facts. Section VIII concludes. There are two appendices: Appendix A provides the details of our sample and definitions of relevant variables used in our analysis; Appendix B provides a guide to programs used to calculate our index of social status.

II. Background and Previous Literature

'Acting white' is a slippery and politically explosive phrase, with little consensus on a precise definition. Neal-Barnett (2001) assembled student focus groups in an attempt to deduce what specific behaviors led to accusations of 'acting white.' The list included being enrolled in honors or advanced placement classes, speaking standard English, wearing clothes from the Gap or Abercrombie & Fitch (instead of Tommy Hilfiger or FUBU), and wearing shorts in the winter. While we are cognizant of the complications and nuances in what is often meant by 'acting white,' our data are not rich enough to test many of the plausible definitions.[4] As such, for the purposes of this paper, *we say 'acting white' exists if there are statistically significant racial differences in the relationship between social status and academic achievement.*

For nearly two decades, there has been a divisive debate among sociologists, cultural anthropologists, newspaper journalists, and policy wonks on the existence of 'acting white'. Fordham and Ogbu (1986) argue for the existence of an oppositional culture among black youth that eschew behaviors traditionally seen as a prerogative for whites. Following this work, there has been a flurry of conflicting analyses as to the nature, extent, and definition of 'acting white.' Ethnographic evidence is hopelessly divided, and the only two nationally representative studies dismiss 'acting white' as nothing more than an urban (or, more precisely, ethnographic) legend.

An interesting feature of the ethnographic literature is that many studies report some negative relationship between "white behaviors" and social status among blacks.[5] The key differences lie in the fact that many of the authors do not report that academic achievement, per se, is identified as a "white behavior." Instead, black students are deemed "white" for behaviors that are often associated with good grades (e.g., answering questions in class, being in advanced classes, or proper diction). Even when academic achievement is highly correlated with "white behaviors," many authors make a distinction between resenting achievement versus resenting behaviors associated with achievement.[6]

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[4] See Ferguson (1998B) for a very nice discussion.
[5] See, for example, Ferguson (2001), Horvat and Lewis (2003), Bergin and Cooks (2002), Datnow and Cooper (1996), Farkas et. al (2002), and Tyson et. al. (2004).
[6] This reticence could be due, in part, to the fear that some may equate 'acting white' with black cultural dysfunctionality. Yet, economic theory informs us that 'acting white' is an equilibrium phenomenon; it is the consequence of two-audience signaling (see Austen-Smith and Fryer 2005). As such, any group presented with the same set of payoffs, strategies, and so on, would behave identically.

The precise behaviors that lead to accusations of 'acting white' may be useful in designing effective policies, but the first-order problem is whether racial differences in the relationship between social status and achievement exist. These differences potentially feed into student investment decisions regarding human capital, social affiliations, and other important economic decisions.[7]

There have been two previous studies on the existence of 'acting white' using nationally representative data (Cook and Ludwig 1997 and Ainsworth-Darnell and Downey 1998). Both are based on the National Educational Longitudinal Study (NELS). These studies examine the relationship between self-reported measures of popularity and dichotomous measures of academic achievement, providing evidence that peer-group norms are not significantly different between black and white tenth graders. Cook and Ludwig (1997) find that high-achievers are actually more popular than low-achievers, and that this positive achievement-popularity relationship is not significantly different between whites and blacks – if anything, the relation is stronger among blacks, suggesting the 'acting white' phenomenon is not empirically relevant.[8]

An important limitation of the previous work is that it relies on measures of popularity and academic achievement that have little variation. Section VI investigates how popularity varies across a more continuous measure of achievement (GPA) using NELS data and our basic specification. We find that racial differences in the relationship between social status and academic achievement exist and are robust to including a myriad of controls.

III. The Data

The National Longitudinal Study of Adolescent Health (Add Health) data set is a nationally representative sample of 90,118 students entering grades 7 through 12 in the 1994-1995 academic year. A stratified random sample of 20,745 students was given an additional (and remarkably comprehensive) in-home interview; 17,700 parents of these children were also interviewed. Thus far, information has been collected on these students at three separate points in time: 1995, 1996, and 2002. There are 175 schools in 80 communities included in the sample, with an average of more than 490 students per school, allowing within-school analysis. Students who are missing data on race or grade level, or who attend schools that do not assign grades are dropped from the sample.

A wide range of data is gathered on the students, as described in detail on the Add Health website (http://www.cpc.unc.edu/projects/addhealth). For our purposes, the key feature of the Add Health data is

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[7] For example, some black students may be accused of 'acting white' because of the way they talk or dress, not because they get good grades. This may be because they are in high-ability classes (AP, Honors, etc.) where there are few black students, and consequently their social circle may have few blacks. See Ferguson (2001).
[8] Their results hold even when they control for nonacademic variables that influence popularity, including family income and participation in varsity sports or band (Cook and Ludwig 1997).

the detailed information regarding friendship associations in schools. All students contained in the in-school survey were asked, "List your closest male/female friends. List your best male/female friend first, then your next best friend, and so on." Students were allowed to list as many as five friends from either sex. Each friend can be linked in the data and the full range of covariates in the in-school survey (race, gender, grade point average, etc.) can be gleaned from each friend. The next section details how we take this information on friendship linkages within schools and construct an index of social status.

Summary statistics for the variables we use in our core specifications are displayed by race in Table 1, with white and black referring solely to non-Hispanic whites and blacks, respectively.[9] Hispanics include any individual who checked yes to the question: "Are you of Hispanic or Spanish origin?" Our primary outcome variable is the social status index. The index is normalized such that it has a mean of zero and a standard deviation of one. On average, blacks and Hispanics have fewer same-race social connections than whites. Whites are .142 above the mean in social status whereas blacks are .024 below the mean, yielding a black-white difference in social status of .166. Hispanics are .141 below the mean social status, yielding a Hispanic-white gap of .283. The table also indicates the average number of friends students have from different racial backgrounds.[10] Friendship networks are remarkably segregated; the typical black and white student each has exactly one friend of a different race.

The remainder of Table 1 presents summary statistics for the other variables used in our analysis. The most important of these covariates is a composite measure of grade point average (GPA) that we constructed. Each student was asked, "At the most recent grading period, what was your grade in each of the following subjects?" The subjects included were English/Language Arts, Mathematics, History/Social Studies, and Science.[11] Each of these grades was given on a 4.0 scale (A= 4, D or Lower =1). Relative to whites, blacks and Hispanics have lower grades (3.0 grade point average relative to 2.5).[12]

Other variables used as controls include: parental education, parental occupation, various school activities and school characteristics. There are substantial differences across races on many of these variables. Black and Hispanic students come from lower socio-economic status families (mother and father less likely to be college educated or working in professional jobs), are more likely to live in urban neighborhoods, and less likely to attend private schools, and so on. While this may seem like a stylized

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[9] A detailed description of these variables and their construction can be found in the Data Appendix.

[10] The rank correlation between the social status index of an individual i and the number of students who list i as a friend is .74.

[11] In calculating the GPA of each student, we only used courses in which valid grades were received, as some students did not take particular subjects in every grading period. Students who did not have a grading period that academic year were told to provide grades from the last grading period of the previous academic year. Recall that students in schools that do not assign grades were dropped from the sample.

[12] There is some evidence that blacks overstate their grades (Bauman 1996). Our calculations, using the National Educational Longitudinal Study which contains transcript data and self-reported grades, suggests that blacks exaggerate their grades by .3 grade points, on average.

set of covariates to use, they comprise all the social and demographic variables available in the in-school survey of 90,118 students.[13]

IV. Measuring Social Status

We develop an index of social status using a measure of social connections in networks. The basic building block is a set of individuals *V*, who belong to the same race/ethnicity and information on whether any two individuals in *V* are socially connected. Our measure identifies social status of the members of a group with the intensity of the social connections among the members of that group.

Given two individuals, *v* and *v′* in *V*, let $r_{vv'} \in \{0,1\}$ denote whether or not they interact socially. The data used in this paper asks students to name their ten closest friends. We say that $r_{vv'} = r_{v'v} = 1$ if *v′* names *v* as one of her friends. or vice versa. In other words, if either student *i* or student *j* lists each other as a friend, both students *i* and *j* will receive an increase in social status for the connection ($r_{ij} = r_{ji} = 1$).[14]

Let *B* be a matrix with as many rows and columns as members of *V*, and typical entry $r_{vv'}$. The matrix *B* summarizes all the information on same-race connections among the members of the race. A social status index is a function that assigns a real number *S(B)* to each matrix *B* of same-race connections, along with functions assigning a real number $s_v(B)$ for each individual member *v* of *V*, such that *S(B)* is the average of the individual $s_v(B)$.

There are three properties that jointly define the social status index. The first property requires that an increase in same-race connections implies an increase in social status. A matrix *B′* has more intense same-race connections than matrix *B* if each individual *v* has more friends of her race in *B′* than in *B*. We say that a social status index satisfies the property of <u>monotonicity</u> if, whenever *B′* has more intense interactions than *B*, *S(B)≤S(B′)*.

The second property is a normalization of the index. A social status index is <u>homogeneous</u> if, when all individuals in *B* have exactly *d* same-race friends, *S(B)=d*.

We introduce some additional concepts to present the third property. Let N_v be the set of *v*'s friends of her same race – her connections in *V*. In a similar vein, consider all friends (in *V*) of *v*'s friends,

and friends of friends of friends, and so on. The resulting set of individuals, with direct or indirect connections to v, is called the connected component of B that v belongs to; denote this set of individuals by C_v.

The third property says that $s_v(B)$ should be the average $s_{v'}(B)$ among v's same-race friends, relative to the average social status of the individuals in v's connected component. In symbols, if S^{C_v} is the average social status of individuals in C_v, a social status index satisfies <u>linearity</u> if

$$s_v(B) = \frac{1}{S^{C_v}} \sum_{v' \in N_v} r_{vv'} s_{v'}(B)$$

There are two qualitative assumptions behind the linearity property. The first is that v's social status depends on the social status of her friends'. The second is that the dependence is modulated by the connected component's social status. A decrease in the social status of one of v's friends will affect v less if v is in a high social status component.

The social status index is the (unique) index that satisfies the properties of monotonicity, homogeneity, and linearity (Echenique and Fryer 2005).

A. A Constructive Example

Below, we provide a precise example on how we calculate social status using the theoretical apparatus explained above with data on friendships within schools from the Add Health data set. Consider an elite middle school – Markovian – which consists of 14 students: Larry, Andrei, Franziska, Claudia, Phillip, Jeremy, Jens, Ronald, Gerhard, Katherine, Rachel, Drew, Jerry, and Matt. The top panel of Table 2 shows the (hypothetical) data gleaned from these individuals when they were asked to list their five best friends. Larry includes Gerhard, Claudia, Andrei, and Jens as friends, while Jeremy only list Andrei and Gerhard. Recall, our measure of social status for an individual i depends on the number of students, j, that list i as a friend, weighted by the social status of each j, coupled with i's original list.

The middle panel of Table 2 translates the data in the upper panel into a matrix of social interactions (B from the formal model) that describes who is socially connected to whom. Absent any information on the strength of connections, we simply assume that individuals are either connected or not and we denote a connection with a value of 1. For each individual in the school, the column and rows represent their list in the upper panel along with all individuals who listed them. The matrix is symmetric.

The bottom panel of Table 2 presents the social status of each student in Markovian Middle School. The most popular student is Gerhard, with an index value of 9.22. Ten of the fourteen students list Gerhard as a friend. Larry is the second most popular student, with social status of 7.17. Rachel is the

least popular. Katherine and Rachel both have two friends, but Rachel's friend (Claudia) is less popular than Katherine's friend (Andrei), thus (by our linearity property) Katherine is more popular than Rachel. Drew, Matt, and Jerry are all friends with one another and no one else at the school. By our homogeneity condition, each has a social status of 2.

There are several noteworthy caveats to our measure of social status. First, it is possible that, given our data, we are not capturing the most popular kids in schools. It is possible that the captain of the football team or the most beautiful female students are quite "popular," but few others report them as friends. Second, to the extent that students have friendship connections outside of school (through religious groups, boy scouts, and so on), these connections will not be captured in our index.

Despite these caveats, the index formalized in this paper is arguably more objective and appealing than measures that have been previously used. The previous measure (Cook and Ludwig 1997) took on three values, with over 80 percent of the sample reporting two of those values. Our index takes on values between 0 and 479 (mean=6.65, sd=14.89), which introduces more variation to understand the relationship between social status and academic achievement.

A more intuitive test of our social status measure is to correlate it with activities which one believes, ex ante, to contain more popular kids (e.g., comparing math club and non-math club students). A simple comparison of means reveals that students in sports are .242 standard deviations more popular than kids who are not in sports. Students in government (.337) and cheerleading (.239) are also more popular, whereas students in the book club (-.101) and math club (-.02) are less popular.

V. Racial Differences in the Relationship Between Social Status and Achievement

Figure 1A presents the relationship between social status and grades among whites, blacks, and Hispanics in the raw data. At low grade point averages, there is little difference among racial groups in the relationship between social status and grades; blacks are more popular than whites. At roughly a 2.5 GPA (an even mix of B's and C's) racial differences start to emerge. Hispanic students lose social status at an alarming rate after this cut-off – while blacks and whites continue to garner friends as their grades increase; the white slope is steeper. Black social status peaks at a grade point average of roughly 3.48 (an even mix of A's and B's) and turns down afterward. Blacks with straight A's are as popular as blacks with a 2.9 GPA. Whites continue to gain social status as their grades increase.

Racial differences in the social status-grades gradient may be due to various background factors that are positively related to social status (e.g., having high-income parents, attending a school that is more socially connected). Figure 1B estimates a non-parametric relationship between social status and grades for blacks, Hispanics, and whites, controlling for background factors including school fixed

effects. [15] Our core set of controls include gender, age, parental education and occupation, a measure of (self-reported) effort, and various school activities such as cheerleading, athletics, and student government. Figure 1B demonstrates that including these controls shrinks the social status differential among low-achievers while maintaining the shape of the social status-grades gradient. Black and Hispanic high-achievers continue to be much less popular than similar whites.

Figures 2A and 2B estimate a similar non-parametric relationship between social status and grades for blacks, Hispanics, and whites, by gender. The relationship is remarkably similar between boys and girls. One caveat: black, high-achieving boys have fewer friends than black, high-achieving girls. Students in public and private schools face a very different tradeoff between social status and grades, as demonstrated in Figures 3A and B. Public schools mirror the aggregate data presented in Figure 1B. In private schools, whites with higher grades are not as popular as their lower-achieving peers; the most popular students have a GPA of roughly 2.0 (C average). For blacks, the gradient is virtually flat. In levels, blacks are substantially less popular than whites, which is an artifact of our same-race social status measure.

Table 3 presents a series of estimates designed to understand the existence of 'acting white' among blacks and Hispanics, providing numbers (and standard errors) to the figures we described. Econometrically, our analysis is of the form:

$$(1) \quad Social\ Status_{i,s} = \beta_0 + \beta_1 \cdot Achievement_i + \beta_2 \cdot Black_i + \beta_3 \cdot Black_i \cdot Achievement_i$$
$$+ \beta_4 \cdot Hispanic_i + \beta_5 \cdot Hispanic_i \cdot Achievement_i + \gamma \cdot X_i + \eta_s + \varepsilon_{i,s}$$

where X_i denotes an array of individual-level variables for agent and η_s denotes an exhaustive set of school dummies.[16] The model is estimated on a sample of only black, white, and Hispanic students;

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[15] To understand the details, consider the following model: $social\ status = H(grades) + X\gamma + e$. We cannot estimate this directly because we do not know H(.). But, $E(social\ status\ |\ grades) = H(grades) + E(X\ |\ grades)\gamma + E(e\ |\ grades)$. Taking the difference, $social\ status - E(social\ status\ |\ grades) = [X - E(X\ |\ grades)]\gamma + [e - E(e\ |\ grades)]$. Thus, to obtain $H(grades)$, one needs to: (1) obtain estimates of $E(social\ status|grades)$ by running a non-parametric regression of social status on grades; (2) obtain estimates of $E(X|grades)$ by running a non-parametric regression of X on grades; (3) compute social status - $E(social\ status|grades)$ and X - $E(X|grades)$; (4) obtain $\hat{\gamma}$ by estimating the linear regression: $social\ status - E(social\ status\ |\ grades) = [X - E(X\ |\ grades)]\gamma + [e - E(e\ |\ grades)]$; and (5) estimate $social\ status - X\hat{\gamma} = H(grades) + e$ (non-parametric regression of $social\ status - X\hat{\gamma}$ on grades).

[16] In terms of capturing the 'acting white' phenomenon, it is not clear whether one should have grades and effort, grades alone, or effort alone as independent variables. We chose to concentrate on grades for three reasons. First, our specification is more consistent with the previous literature. Second, the effort variable in Add Health is a bit suspicious. Respondents are asked, "In general, how hard do you try to do your school work well." Blacks report more effort than whites and cheerleaders report more effort than students in math or science clubs. Third, we have transcripts to validate self-reported GPA, but no such measure to validate effort. If we substitute grades for effort, we find that there are no racial differences in the relationship between social status and effort.

thus β_2 and β_3 are interpreted as black coefficients relative to whites and β_4 and β_5 are Hispanic coefficients relative to whites. We refer to $\beta_1 + \beta_3$ and $\beta_1 + \beta_5$ as the 'acting white' coefficients for blacks and Hispanics, respectively. The dependent variable is our social status index. The independent variables are constant across columns and include: (self-reported) grades and effort, socioeconomic background (parental occupation and education), and school activities (cheerleading, sports, and student government). In all cases the estimation is done using weighted least squares, with weights corresponding to sample weights provided in the data, and including school fixed effects. By comparing students who attend the same school (and likely live in similar neighborhoods), one controls for different grading standards, social norms, and mean social status levels across schools.[17] As noted above, this may seem like a stylized set of covariates to include. Our approach is to control for these variables and see whether or not there are any racial differences in the relationship between social status and grades left to be explained.[18] Fortunately, whether or not we include controls in addition to school fixed effects has little impact on the results.

Column 1 of Table 3 estimates our specification on the full sample of students. These results confirm the results illustrated in Figure 1; the 'acting white' coefficient is large and statistically significant for blacks and Hispanics. To account for the non-linearity inherent in the relationship between social status and achievement, we group students into four categories based solely on GPA: 1 to 2.0, 2.0 to 3.0, 3.0 to 3.5, and 3.5 and higher.[19] These categories are roughly aligned with the changes in slope apparent in Figure 1B. The bottom two rows of Table 3 indicate the fraction of black and Hispanic students in each GPA category.

The salience of 'acting white' increases monotonically with achievement. For low-achievers (students with less than a 2.0 GPA) there is no 'acting white' effect, which is consistent with Figure 1B. For students with a 3.5 GPA or better, the 'acting white' coefficient is -.305, over three times the magnitude of the effect in the overall sample. This captures the divergence in social status among black and white high-achievers depicted in Figure 1B. For Hispanics, the results are more mixed. The smallest effect exists among low-achievers, but 'acting white' is most salient among Hispanics with grade point averages between 3 and 3.5. Note: the majority of blacks and Hispanics are in the 2.0 to 3.0 GPA category. For these students, racial differences between social status and academic achievement are small for blacks and relatively large for Hispanics.

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[17] For instance, if high-achieving black students attend schools where grading standards are lax and social status levels, inflated, then this specification will purge the upward bias.

[18] We have also run all regressions with effort*race interactions. The results are very similar with slightly higher standard errors.

[19] The results to come are similar if one includes higher-order polynomials on grades as regressors, though the interpretation of the coefficients is more convoluted.

A. Robustness Checks and Alternative Empirical Models

One of the biggest worries with our results thus far is that we implicitly assume that higher grades cause lower popularity. It is certainly plausible that high popularity causes lower grades through a simple time constraint or other mechanism. If causality runs in the opposite direction than we assume, linking racial differences in the relationship between social status and academic achievement to the 'acting white' phenomenon is misleading.

The simplest and most direct way of addressing the potential for reverse causality would be to find a plausible instrument for grades and re-estimate equation (1). We were unsuccessful at finding plausibly exogenous variation in grades or any form of academic achievement. We were, however, mildly successful at finding a way to vary popularity in ways that may not affect grades: a student's physical attractiveness.

Recall, if we think that a regression of popularity on grades gives a significant coefficient either because of simultaneity or omitted variables, we can write it as a two-equation system. Then, if we have a robust instrument for the second equation (where grades are the dependent variable), it provides a valid estimate of the causal effect of social status on grades (Wooldridge 2002). If racial differences in that estimate are insignificant, and the sample is big enough to have power, then it is a good piece of evidence that social status does not cause grades.

Table 4 estimates a series of models, including equation (1), and additional models of the form:

(2) $\quad Grades_{i,s,R} = \beta_0 + \beta_1 \cdot Social\ Status_i + \gamma \cdot X_i + \eta_s + \varepsilon_{i,s,R},$

in column 1 and using interviewer ratings for attractiveness for each student as an instrument for popularity in column 2. Each interviewer was asked to rate the physical attractiveness of each student in one of five categories: very attractive (unattractive), attractive (unattractive), and average. Columns 3 through 5 estimate a similar equation where social status is the dependent variable. Note: the subscript R denotes that each regression is run within each racial group separately.

Column 1 of Table 4 estimates equation (2) using weighted least squares and our standard set of controls. The relationship between grades and social status is significantly more muted when grades are the dependent variable, and there are no racial differences between black and whites and small differences between Hispanics and whites. Column 2 estimates the same equation instrumenting for social status with a student's physical attractiveness. The instrument has a strong first stage (F-statistic of roughly 40), and the second stage has similar coefficients for blacks (.774 (.426)), Hispanics (1.480 (1.219)), and whites (.692 (.165)). One clearly cannot distinguish between racial groups in the magnitudes of the coefficients, which provides some evidence that reverse causality cannot explain our results.

Another important check is to ensure our results are robust to estimating a fully interacted model – allowing coefficients to vary by race for every independent variable, not just academic achievement. Columns 3 through 7 estimate equations identical to (1), within race. Column 3 reports the results for all grade levels and columns 4 through 7 provide estimates within GPA categories. In our simple interaction framework, we estimated racial differences in the relationship between social status and achievement to be -.098 on the full sample and -.305 among students with a 3.5 GPA or higher. In the fully interacted model, the estimates are strikingly similar – -.109 and -.272. The results are also consistent with the patterns presented in Figure 1B.

B. Sensitivity Analysis

Tables 5 and 6 explore the sensitivity of our results across a wide variety of sub-samples of the data and alternative specifications. We estimate separate regressions for each indicated sub-sample of the data. Table 5 estimates regressions on the full sample of students; Table 6 restricts the sample to students with a 3.5 GPA or better (hereafter referred to as "high-achievers"). In most cases the qualitative results are identical, though the magnitude of the 'acting white' coefficient is three to four times as large among high-achievers. We report only coefficients on grades and the race-grades interaction (and their associated standard errors) for blacks and Hispanics. The top row of the tables present the baseline results from columns 1 and 5 in Table 3, respectively.

As one peruses the tables, it becomes evident that the 'acting white' phenomenon is robust across most subsets of the data, though there are several notable exceptions. 'Acting white' is modestly more prevalent among black males relative to black females, and this is especially true among high-achievers.[20] Whether or not one uses the sample weights provided in the Add Health data matters little. 'Acting white' is mainly in public schools and non-existent among blacks in private schools. This latter finding may partially explain why black students in private schools appear to do especially well (Akerlof and Kranton 2002, Neal 1997, and Grogger and Neal 2000).[21]

ALTERNATIVE MEASURES OF SOCIAL STATUS

The 'acting white' coefficient is also robust to different measures of social status. We include the following three alternative measures of social status: (1) a non-normalized version of our index; (2) same-race friends – measured as how many individuals j put i down as a friend; (3) all-race social status; and

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[20] Plotting race-specific social status and grades by race and gender reveals that social status decreases for black males earlier (3.25 GPA relative to a 3.5 GPA) and the gradient for high-achievers is steeper.

[21] We have also investigated whether 'acting outlier' is the underlying problem and not 'acting white' as such, by estimating the relationship between social status and grades among whites in schools with low average test scores. Whites in these schools continue to have a positive relationship between social status and grades.

(4) other-race social status. Unless otherwise noted, these measures have been normalized such that they have a mean of zero and a standard deviation of one. The sign and magnitude of the 'acting white' coefficient for blacks and Hispanics is robust across the first three measures. The positive coefficient on other-race social status suggests that blacks and Hispanics substitute towards other-race friends in the presence of 'acting white'. The magnitude of the coefficient, however, is significantly smaller so that, on net, 'acting white' (race effect minus the substitution effect) still dominates.[22] Blacks and Hispanics with a GPA above 3.5 are actually losing other-race friends, exacerbating the effect of 'acting white' among this select group. This result is surprising, as one might expect high-achieving minority students to find refuge among high-achieving whites.[23]

We also investigated the number of fights that a student had been involved in as a measure of social status (not shown in tabular form). There were marked differences in the relationship between grades and fights, with black students much more likely to be involved in fights as their grades increased. Hispanics followed a similar pattern.

ALTERNATIVE MEASURES OF ACHIEVEMENT

Our results are also robust to different notions of academic achievement. We include three additional measures of achievement: math and science grades, participation in academic clubs such as math club, book club, foreign language clubs and so on, and Peabody Picture Vocabulary Test scores. In all cases, the magnitude of the 'acting white' coefficient is less than our baseline specifications, though math and science grades and academic clubs are both negative and statistically significant.

Test scores, in lieu of grades, provide different results. The coefficient on the race-achievement interaction is -.003 (.023) for blacks and -.04 (.021) for Hispanics. This is surprising, but quite consistent with the intuition behind 'acting white,' assuming that test scores are less observable by one's peer group than grades. In particular, grades are likely more observable to peers than test scores. In an environment where 'acting white' exists, one would expect to see a steeper (negative) relationship between grades and social status.

BY GRADE LEVEL

Theoretically, one could imagine that the prevalence of 'acting white' could change as students are maturing and developing their identities (Cross and Fhagen-Smith 2001). We estimate our main fixed-

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[22] The bulk of the substitution effect is occurring among students with a GPA between 3.0 and 3.5, especially among blacks. Including controls for number of "potential friends" (i.e. number of same-race students in GPA category by school) does little to change this.

[23] We are by no means implying that high-achieving whites are in any way *refusing* to befriend minorities; only reporting a correlation in the data.

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effects equation separately for each grade level from 7 to 12, though we only report 'acting white' coefficients for seventh, ninth, and twelfth grades. There are no discernible patterns by grade level.

ACCOUNTING FOR THE SUPPLY OF HIGH-ACHIEVING BLACK STUDENTS

One possible reason that blacks face a steeper social status-grades gradient is a supply shortage of high-achieving black students. If students tend to associate with other students with similar backgrounds (in terms of race, grades, neighborhood location, etc), then one might observe a steep trajectory for blacks at higher GPA levels simply due to the fact that there are few blacks in their classes. Sociologists have argued for some time that this is a likely reason for the alienation of high-achieving black students. If so, this potentially provides a different qualitative understanding of the 'acting white' phenomenon.[24]

We account for the number of same-race students with similar grades in each school by dividing the GPA distribution into four categories: less than 2.0, 2.0 – 3.0, 3.0 – 3.5, and greater than 3.5. Within each grade category, we count the number of students by race separately for each school, and we include this variable as an independent regressor in our basic model, linearly.[25] Accounting for the supply of black high-achievers has a modest effect on the 'acting white' coefficient, reducing it from -.103 to -.081, and virtually no effect on other covariates (not shown in tabular form).[26]

STUDENT ACTIVITIES

There are many opportunities in schools for students to self-select into particular activities, ensuring that most of their peer interactions are with other students with similar interests. These include organized sports and cheerleading, various clubs (languages, math or science, drama, or debate), band and music, or the National Honor Society. These activities might differ in their affirmation of high achievement; the honor society likely affirms achievement in a way that organized sports do not. Yet, across this diverse set of potential student activities, only one eliminates the racial difference in the relationship between social status and achievement: the National Honor Society. In all other activities, there remains a substantial gap, suggesting that self-selection into extra-curricular activities does not eliminate the effects of high grades among blacks and Hispanics. Thus, the hypothesis by some that high-achieving blacks take up extracurricular activities to deflect hostility (e.g., Farkas et al. 2002) is not borne out in the data.

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[24] The supply of students with particular grades is itself an endogenous outcome of 'acting white,' thus these results should be interpreted with some care.

[25] Thus for each school, there are 12 categories of students (three race categories times four GPA categories) and we count how many students there are in each category.

[26] We have also partitioned the number of potential friends into twenty equally sized bins and included them as dummy variables. Using this approach modestly decreases the 'acting white' effect.

INTERRACIAL CONTACT

The most striking aspect of Tables 5 and 6 is how the coefficient on 'acting white' varies in arenas with more or less interracial contact. We partition the sample of schools in several ways: high versus low segregation, schools where blacks and whites are the simple majority and schools that are 80 percent black versus those that are 20 percent black. Remarkably, schools that are less than 20 percent black have the largest 'acting white' effect for blacks and Hispanics.[27]

It is difficult to discern the true effect in schools that are greater than 80 percent black. In schools that are 80 percent black or greater, the coefficient on grades is large and negative and the coefficient on black interacted with grades is large, positive, and imprecisely measured. A joint significance test confirms that one cannot distinguish between the coefficients on grades and black*grades in the full sample and schools that are greater than 80 percent black. We can be confident, however, that the 'acting white' coefficients are statistically different between schools that are less than 20 percent black and those that are greater than 80 percent.

Results in Tables 5 and 6 are also contrasted between high- and low-segregated schools. The amount of segregation in any school A is measured as:

$$(3) \qquad \text{Segregation}_A = \frac{\text{Expected(CrossRace Friends)} - \text{Observed(Cross Race Friends)}}{\text{Expected(CrossRace Friends)}},$$

where cross-race friends refers to the total number of friends from each race with students from different races.[28] The expected number of cross-race friends is the sum of the expected value for each race combination, omitting friends of the same-race. The expected number of friends between race i and race j is equal to the total number of friends of race i multiplied by the probability that an individual of race i is friends with a student of race j.

The segregation index ranges from -1 (pure out-race preference) to 1 (total segregation). A value of 0 indicates that there is no group preference: friends are random with respect to race. The measure of segregation was calculated for each school and divided the set into high- and low-segregation school; cutting at the school median.

Surprisingly, blacks in more segregated schools incur less of a tradeoff between social status and achievement. The coefficient on the 'acting white' term is twice as large in schools that are above the median in terms of segregation (-.055 compared to -.136).[29] Among high-achievers, the differences are starker (-.144 and -.536). In addition, Figures 4A and B which estimate (non-parametrically) the social

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[27] This is true even after controlling for the number of blacks within a school or controlling for the number of blacks with similar grades.

[28] This index is a modification of Freeman (1978) and related to Echenique and Fryer (2005). For a complete derivation, see the Add Health's School Network Variables Codebook available at: http://www.cpc.unc.edu/projects/addhealth/codebooks/wave1.

[29] This result is robust to accounting for the potential supply shortage of black students in very integrated schools.

status-grades relationship in high- and low-segregation schools, accounting for our core set of controls, provides more evidence attesting to the fact that 'acting white' is particularly salient among high-achievers and those in schools with more interracial contact.

Using the Moving to Opportunity (MTO) experiment, which assigned housing vouchers via random lottery to public housing residents in five large cities, Kling and Liebman (2004) and Kling, Ludwig, and Katz (2005) provide evidence of gender differences in the effect of the treatment on a variety of outcomes for youth. Females exhibit lower arrests rates, improvements in education and mental health, and are less likely to engage in risky behaviors. Males, on the other hand, were more likely to engage in risky behaviors, had no decrease in arrests rates, and experienced more physical health problems (e.g., injuries or accidents). These results suggest that males and females may respond to their environments in distinct ways; 'acting white' may well be the underlying cause.

One way to test this general hypothesis with the current data is to examine gender/race differences in the relationship between social status and grades in schools with more or less interracial contact. Results are presented in the bottom row of Tables 5 and 6. Consistent with the evidence from MTO, 'acting white' is twice as large for high-achieving males relative to high-achieving females in low-segregation schools. The coefficient on black*grades for males in low-segregation schools is seven times as large as the identical coefficient estimated on the full sample. The fact that 'acting white' is more prevalent in schools with more interracial contact is surprising, but consistent with growing evidence that there can be significant pressure in racially heterogeneous schools to toe the racial line (Tatum 1997).

VI. Reconciling our Results with Previous Work on 'Acting White'

In this section, we will attempt to reconcile our results with Cook and Ludwig (1997) and Ainsworth-Darnell and Downey (1998) – the only two empirical papers on 'acting white' which use nationally representative data – both of which report very different findings than those presented here.

An important potential difference between our analysis and the previous work is that it relies on measures of popularity and academic achievement that have less variation. The NELS contains a question that asks if the student "thinks others see him/her as popular." The answer choices are: 'not at all,' 'somewhat,' or 'very'; over 80 percent of the respondents categorized themselves as 'somewhat' or 'very' popular. Cook and Ludwig (1997) also use two dichotomous achievement measures: (1) whether the student earns "mostly A's in math"; and whether the student is in the honor society. Another possibility is that Add Health and NELS are just different data sets with different sampling protocols and yield different conclusions.

To understand whether the differences in our results are due to different data or better measures, we construct measures of social status and academic achievement in the Add Health that are as similar to the NELS variables as we could make them and estimate equation (1) with our standard set of controls in each dataset. If this approach yields different results for each data set, we will conclude that there is something different about the individuals in the Add Health relative to the NELS and we will further investigate these differences. If we find similar results across the datasets, we will know that different measures are the culprit.

Table 7 estimates the prevalence of 'acting white' among eighth- and tenth-grade students in the NELS. The equation estimated is identical to that implemented in the Add Health data, described by equation (1). Social status is measured as a dichotomous variable; equal to one if students in class see the respondent as very popular and equal to zero if not.[30] The independent variables vary by column and are generally increasing from left to right. Grades are grade point averages calculated from each student's transcript.

Columns 1 and 5 of Table 6 show that there is a positive relationship between grades and popularity, though the relationship is smaller for blacks, which is consistent with 'acting white.' The 'acting white' coefficient is large and statistically significant for blacks in both eighth and tenth grades, but never statistically significant for Hispanics. Columns 2 and 6 include controls for test score, effort, SES, gender, and extracurricular activities (athletics, student government, and cheerleading). The coefficient on grades and the 'acting white' coefficient change little, suggesting that black-white differences in covariates are not driving the negative 'acting white' coefficient (similar to the results in the Add Health).[31]

Columns 3 and 7 include controls for school characteristics. Private school attendance is associated with greater reported social status, but the inclusion of school characteristics does not alter the 'acting white' coefficient. Columns 4 and 8 present results with the inclusion of school fixed-effects. These results are consistent with our previous analysis using the Add Health, though the coefficients are smaller. There is no statistical difference between Hispanics and whites in the relationship between popularity and grades in the NELS. Other coefficients stay essentially the same.

These results differ substantially from those published in Cook and Ludwig (1997) and Ainsworth-Darnell and Downey (1998). The estimated racial differences in the relationship between

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[30] In the raw data, the measure takes on three values, whether or not students see the respondent as: (1) very popular; (2) somewhat popular; or (3) not popular at all. Only 15 percent of the tenth-grade sample (and 18 precent of the eighth-grade sample) reported being not popular at all – thus we merged responses (2) and (3). See the Data Appendix for details.

[31] Including the interactions Black*Test Score, Black*Effort, or Black*SES does little to alter the results.

social status and academic achievement are smaller than Add Health, but quite different (i.e., the opposite sign!) from the original analysis in the NELS.

We also run a similar analysis using Add Health data. To be consistent with the popularity measures used in the NELS, we construct two similar measures in Add Health: (a) whether the respondent feels accepted by people at the school and (b) whether the respondent feels close to people at this school. These measures are ranked 1 to 5. A value of 1 implies the respondent strongly disagrees and 5 implies they strongly agree. Note: we reversed the coding from the survey so that the direction is consistent with the NELS analysis – higher numbers imply more popular. To further match the NELS analysis, we created two dichotomous achievement metrics: (a) a student earned an A in math (as opposed to a B or C) and (b) the student is in the nationally honor society. We also limit the sample to tenth graders to match their sample.

Table 8 demonstrates that there are no racial differences in the relationship between social status and academic achievement in the Add Health using measures that closely resemble data available in the NELS, though large standard errors make definitive conclusions difficult. Columns 1 through 4 estimate our standard specification with the index of social status as the dependent variable and "A's in Math" as the achievement metric in columns 1 and 2 and National Honor Society in columns 3 and 4. Odd-numbered columns contain identical controls to Table 3, including an exhaustive set of race dummies, and even-numbered columns add school fixed effects to this set of controls. We only show race coefficients for blacks and Hispanics. White is the omitted category.

Making A's in math is associated with lower social status on our index of social status, but is not appreciably different between blacks and whites. For Hispanics, the differences are statistically significant and substantively large. Across the three measures of popularity in Table 8, there are no significant differences between blacks and whites. On two out of the four popularity measures, Hispanics have significant differences.

These results, coupled with Table 7, suggest that an important reason for the differences between the previous literature and the current analysis is how one defines academic achievement. Dichotomous measures mask the variation needed to estimate racial differences in the relationship between social status

and academic achievement – at least for Blacks. We were unsuccessful at reconciling the results in both data sets for Hispanics.

VII. Interpreting the Data Through the Lens of Social Theory

A number of stylized facts emerge from the analysis of the preceding sections. There are racial differences in the relationship between social status and grades. These differences are roughly three times as large for black students with a 3.5 grade point average or higher. 'Acting white' is more salient in public schools and among children from low-education families. Accounting for self-selection into extra-curricular activities or the supply of black high-achievers does little to undermine the effect. Environments with more interracial contact are associated with a steeper social status-grades gradient among blacks; seven times as large for high-achieving black males. The results are not an artifact of our particular measure of social status and they hold in the two nationally representative samples in which one can construct measures of popularity when more continuous measures of academic achievement are used.

In this section, we consider the extent to which existing stories can successfully account for this set of facts. It is important to note that the first two theories are our attempt to put more structure on what were essentially verbal accounts of the phenomenon.

A. *An Oppositional Culture Identity Model*

The most prominent theory to explain the stylized facts put forth is the oppositional culture hypothesis, developed in Fordham and Ogbu (1986) and Fordham (1996).[32] The hypothesis states that the observed disparity between blacks and whites stems from the following factors: (1) white people provide them with inferior schooling and treat them differently in school; (2) by imposing a job ceiling, white people fail to reward them adequately for their academic achievement in adult life; and (3) black Americans develop coping devices which, in turn, further limit their striving for academic success. Fordham and Ogbu (1986) suggest the problem arose partly because white Americans traditionally refused to acknowledge that black Americans were capable of intellectual achievement, and partly because black Americans subsequently began to doubt their own intellectual ability, began to define academic success as white people's prerogative, and began to discourage their peers, perhaps unconsciously, from emulating white people in striving for academic success.

The Fordham and Ogbu hypothesis can be directly imputed into a simple economic model of identity and human capital acquisition, a la Akerlof and Kranton (2000, 2002). In their language, identities are accompanied by certain "prescriptions" that define appropriate behaviors for a person of that type. When an individual makes decisions in line with these prescriptions, there is a utility benefit. In

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[32] Since then, efforts have been focused on refuting Fordham and Ogbu's hypothesis.

standard models, a student invests in human capital until the marginal cost of investment equals the marginal benefit of that investment. Fordham and Ogbu (1986) argue that institutional discrimination lowers the marginal benefit of investment for certain minority groups. As a rational response, these minorities began to equate educational achievement with whiteness, thereby altering the prescriptions (e.g., what it means to "be black").

The predictions of the oppositional culture identity model face mixed success in terms of the patterns observed in the data. Consistent with the theory, there are no racial differences in the relationship between social status and achievement among blacks in private schools, as these environments likely change identity prescriptions.

The theory, however, does quite poorly in explaining why 'acting white' is more salient in schools that are less than 20 percent black relative to those that are greater than 80 percent black. In fact, Fordham and Ogbu (1986) base the oppositional culture hypothesis on behavior observed in an all-black high school in Washington, DC.

B. *A Sabotage Model*

Another explanation for racial differences in the relationship between social status and achievement is that blacks simply sabotage their high-achieving peers.[33] McWhorter (2000) is a prominent advocate of this view.

Consider the following skeletal outline of a sabotage model. Imagine a world with two neighborhoods: a majority community and a minority community, each containing many individuals. Individuals come in two flavors: high-ability and low-ability, which are determined by Nature and publicly observed within a community. There are two states of the world: discriminatory and fair, which are unknown. Individuals observe their ability type and make a dichotomous human capital decision. Assume that human capital is less costly to obtain for high-ability workers. Individual utility is partly determined by what others (outside the community) perceive about their ability.

Firms observe each individual's level of human capital and decide whether or not to hire them. When the state of the world is discriminatory, firms refuse to hire minority workers. In a fair state, workers are hired if and only if they have invested in human capital. Assume that payoffs are such that low-ability types never have incentive to acquire human capital.

In this framework, low-ability agents have incentive to "hold back" individuals with high ability when the cost of doing so is less than the net benefit, which will hold when the state of the world has a high enough chance of being fair. As more high-ability individuals invest in human capital and garner

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[33] There are several mechanisms that could lead to such behavior. The most simplistic is that blacks and Hispanics punish, rather than reward, successful members of their group.

success, the world may be revealed to be fair, putting the onus of non-achievement on low-ability individuals. Thus, the net benefit of sabotage is increasing in the fraction of individuals who escape.

While we do not have definitive proof, there is evidence that black students with college-educated parents in schools that are less than 20 percent black know that success is possible. They are more likely to graduate from high school, have higher Scholastic Aptitude Test scores, and are more likely to be admitted into Ivy League universities (Massey et al., 2002). The sabotage theory would predict that there would be no racial differences in the relationship between academic achievement and social status among this set of students. Yet, Table 6 suggests the opposite: the coefficient on grades is .109 and the coefficient on black*grades is -.549 and statistically significant.

C. *A Two-Audience Signaling Model*

Suppose there are many individuals, a set of firms, and a peer group. There are two discrete stages of an individual's life: "school years" and "employment years." Nature moves first and distributes an innate ability to each student. Abilities, once disseminated, are fixed. An individual is endowed with one unit of non-storable time in each period; the allocation of which is common knowledge. At the start of each period, an individual's time allocation problem is influenced by whether or not she is an accepted member of her peer group. Peer groups are valued because, other things equal, leisure time spent in the group is more enjoyable than leisure time spent outside the group. If an individual is not an accepted member, then she makes decisions without reference to the group. If she is an accepted group member, then she may be called upon to make some observable time contribution to the group.

In the "school years," individuals allocate effort between leisure, group commitments, and a once-and-for-all investment in education. At the end of the school years, an individual's education level is fixed and firms choose wage offers to maximize expected profit. If an individual is rejected by the group during the school years, she cannot be accepted in the post-school years; however, an individual accepted by the group in the school years may be rejected in the post-school years.

At the beginning of the employment years, the group makes another acceptance decision, and Nature reveals an individual's post-school-year time commitment to the group. Then, each individual decides whether or not to contribute to the group, and makes a work-force effort decision. Any student who is accepted by the group and contributes in the post-school years receives a lifetime utility benefit. The key feature of the group's payoffs is that the group is strictly worse off having accepted an individual who chooses not to make her required contribution than it would be was such an individual rejected.

The two-audience signaling model has two clear predictions – racial differences in the relationship between social status and academic achievement will exist and these differences will tend to be exacerbated in environments with more interracial contact and increased mobility – both of which are

consistent with the empirical evidence presented in Section IV. In addition, black high-achievers also report more risky behaviors (smoking, drinking, lying to their parents, fighting, etc.) and less happiness than white high-achievers, which is consistent with the signaling aspects of the model.

VIII. Conclusion

For nearly twenty years, there has been a debate among social scientists on the extent and potential impact of racial differences in peer sanctions often referred to as 'acting white.' The *consensus gentium* is: (1) 'acting white' does not exist in nationally representative samples, and (2) to the extent that it is discernible in data, it is concentrated in low-income minority schools. This paper demonstrates that an additional set of facts points in a very different direction due to an adjusted definition of academic achievement. There is, however, a crucial point of agreement. We, like Ferguson (2001), Cook and Ludwig (1997), and Ainsworth-Darnell and Downey (1998), find scant empirical support for the oppositional culture hypothesis described in Fordham and Ogbu (1986).

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The Longitudinal Study of Adolescent Health (Add Health)

Grades
Students were asked "At the most recent grading period, what was your grade in each of the following subjects?" where the subjects were English/Language Arts, Mathematics, History/Social Studies, and Science, and possible answers were A, B, C, or "D or lower". Assuming student answered that their school grades on a letter basis, we averaged the grades in these four subjects according to a 4.0 scale (i.e. A=4.0, B=3.0, C=2.0, and D or lower=1.0).

Race
Students were asked "What race are you?" and "Are you of Hispanic or Spanish origin?" Non-Hispanic white, black, or Asians were coded as separate values. Students answering yes to the latter question were coded as Hispanic. Answers to the former question could include multiple races; non-Hispanic mixed race students (i.e., students selecting multiple races) were also coded separately.

Gender
Students were asked "What sex are you?" Male or female.

Age
Students were asked "How old are you?" Answers range from 10 to 19, where 19 indicates age is 19 or older.

Effort
Students were asked "In general, how hard do you try to do your school work well?"
Possible answers were "I try very hard to do my best"; "I try hard enough, but not as hard as I could"; "I don't try very hard at all"; and I never try at all". We coded these on a 1-4 scale where 4 represents the highest level of effort (i.e., the first response) and 1 represents the lowest.

Athletics
Students were asked whether they were participating or planned to participate in a number of clubs or teams. This variable was coded as one if any of the following teams were indicated: baseball/softball, basketball, field hockey, football, ice hockey, soccer, swimming, tennis, track, volleyball, wrestling, or other sport.

Student Government
This variable was coded as one if student indicated he/she participated in the student council.

Cheerleading
This variable was coded as one if student indicated he/she participated in cheerleading or the dance team.

Parental Education
Student was asked how far in school their mother and father went. This variable is coded as one if the parent graduated from a college or university, or if they had professional training beyond a four-year college. If the student does not know the exact level of education, it is coded as missing. Otherwise, other educational levels are coded as zero.

Parental Occupation
We coded two variables each for the mother and father. The first is based on the student's description of their mother or father's job—whether they are "white collar professionals". It was coded as one if,

according to the student, the parent's occupation is "Professional 1" (such as doctor, lawyer or scientist); "Professional 2" (such as teacher, librarian, nurse); "Manager" (such as executive or director); or "Technical" (such as computer specialist or radiologist). Other professions are coded as zero. If the parent doesn't work or is disabled or retired, it is coded as missing. The second variable is coded as one if the parent is a housewife or househusband, according to the student, and zero otherwise.

Urban/Suburban/Rural and Public/Private School
We created dummies for whether the school is public or private and whether it is located in an urban, suburban, or rural setting, according to the school administrator questionnaire.

Percent Teachers Black/Asian/Hispanic
These variables are taken from the school administrator's answer to the question "Approximately what percentage of your full-time classroom teachers are of each of the following races?" where races listed include black, Asian, and Hispanic.

Physical Attractiveness
These variables are taken from section 40 of the In-Home Survey Instrument. Each interviewer was asked, "How Physically Attractive is the Respondent?" The answer choices were: very attractive, attractive, average, unattractive, very unattractive.

Appendix B: Guide to Programs

The programs used to calculate the index of social status are written in Matlab. There are three program files: cs_actingwhite.m, bs_actingwhite.m, and n_actingwhite.m. They are adapted from programs used to calculate the Spectral Segregation Index (Echenique and Fryer 2005).

cs_actingwhite.m is executed and calls the other two files. It takes as its input an identification string corresponding to a list of schools. Each list is contained in a text file called list#.txt, where # is the identification string. This string need not be numeric. For example, a list of three schools might look like:

"001"

"002"

"003"

This list would tell cs_actingwhite.m to compute indices for the schools identified by 001, 002, and 003. Identification numbers should be in double quotes, with each number on a separate line. The list#.txt files should be in the same folder as the three m-files.

cs_actingwhite.m calls bs_actingwhite.m for each of the schools in list#.txt, then bs_actingwhite.m calls n_actingwhite.m. Each school has a corresponding file, school_#.txt, which contains data on within-school friendships. The school_#.txt files should also be in the same folder as the other files.

In the school_#.txt files, each row corresponds to an individual student. The first column of each row is an identifier, which should be in double quotes. The second is the school identification number for an individual student. The next 10 columns contain the ID numbers of the friends listed by that student. If the student lists fewer than 10 friends, some of these columns will be empty. The final column lists the group identifier for that student. All of the columns should be comma-separated. A line from a school_#.txt file might look like:

"106685",94579955,92579959,96579956,97579953,98579959,95579950,98579957,,,,,4

In this case, "1006685" is a unique identifier for the student with ID 94579955. The student belongs to group 4 and lists six friends.

n_actingwhite.m takes the school text files and counts both friendships and same-group friendships. A friendship is counted between students i and j if i lists j as a friend or if j lists i as a friend. The information on friendships is passed to bs_actingwhite.m, which performs the calculations to find indices of social status.

The programs generate two kinds of output files. Information on each school is outputted in files named si_#.txt, where # is the school identifier. Sipartial.mat and spectralindex.dat contain information on the entire set of schools in list#.txt.

sipartial.mat and spectralindex.dat each contain 12 columns:

Column 1: school identifier

Column 2: group identifier

Column 3: index for school

Column 4: number of connected components for group

Column 5: number of singletons for group

Column 6: median connected component size for group

Column 7: largest connected component size for group

Column 8: smallest connected component size for group

Column 9: total number of students in group

Column 10: percent of students belonging to group

Column 11: average number of same-group friends

This information is stored continuously in sipartial.mat. The same information is stored in spectralindex.dat after calculations for all schools have been completed.

The si_#.txt files each have six columns:

Column 1: school identifier

Column 2: group identifier

Column 3: connected component identifier
Column 4: student identifier
Column 5: individual index
Column 6: connected component index
A separate file is created for each school in list#.txt.
Like the files used to calculate the Spectral Segregation Index, these m-files can be adapted to other applications.
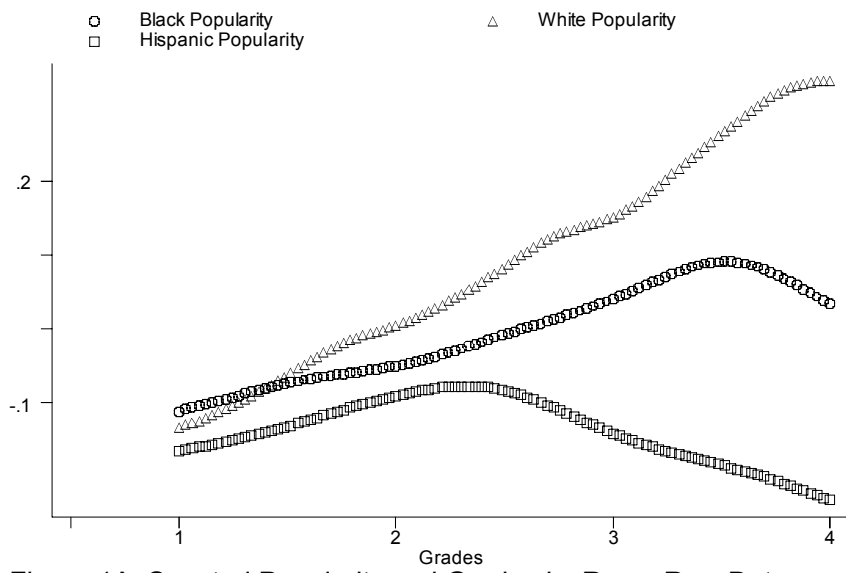
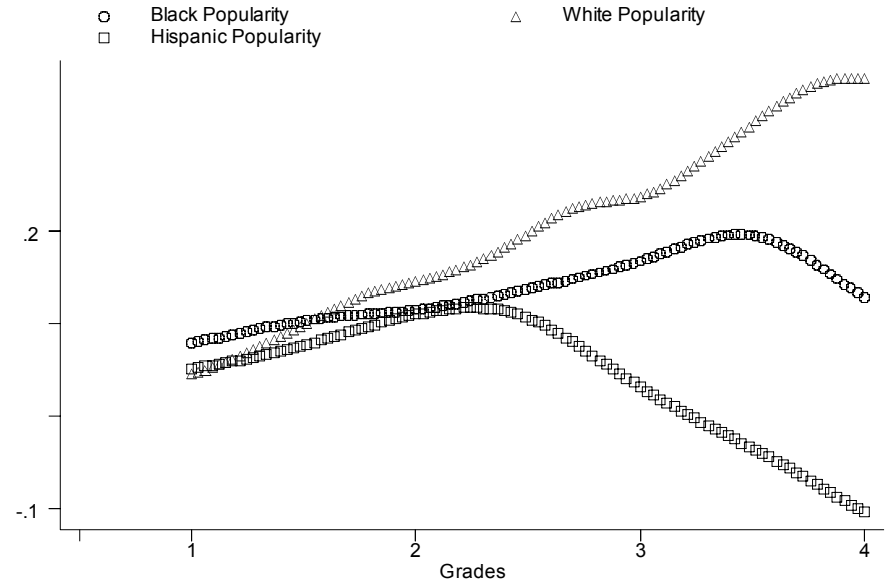Figure 1A: Spectral Popularity and Grades by Race, Raw Data

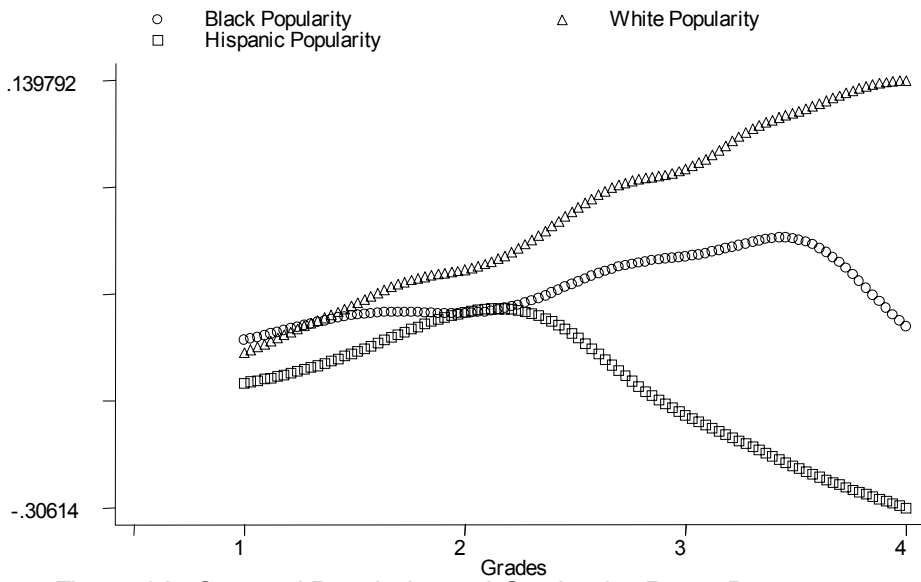Figure 1B: Spectral Popularity and Grades by Race, With Controls
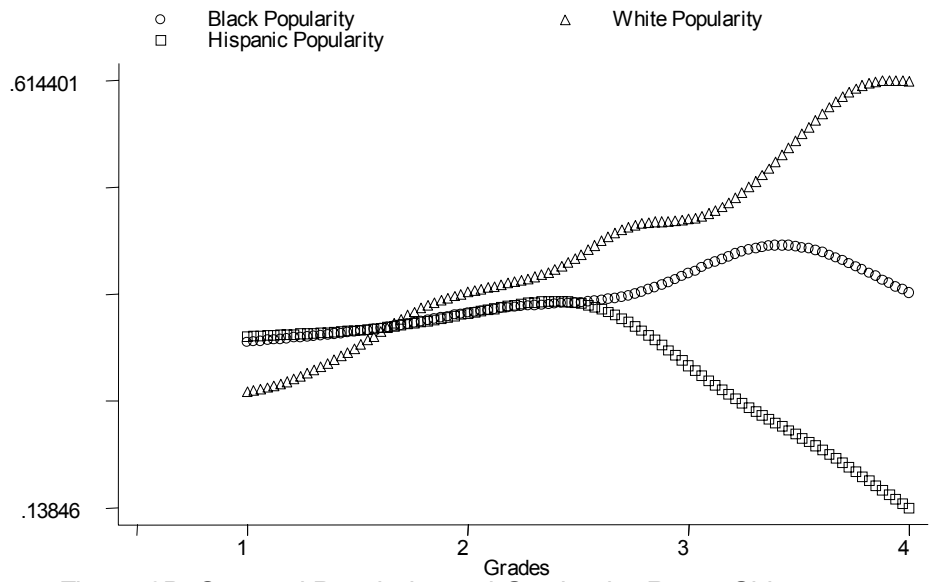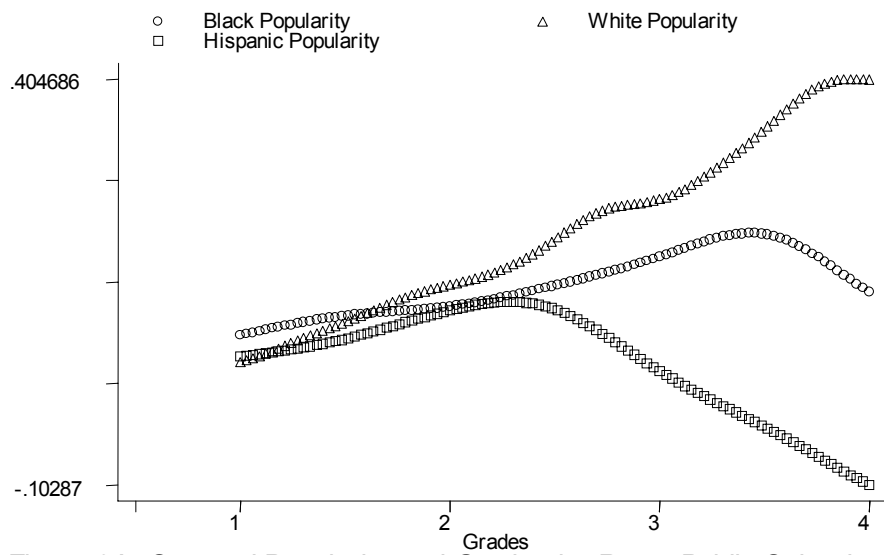
Figure 2A: Spectral Popularity and Grades by Race, Boys

Figure 2B: Spectral Popularity and Grades by Race, Girls

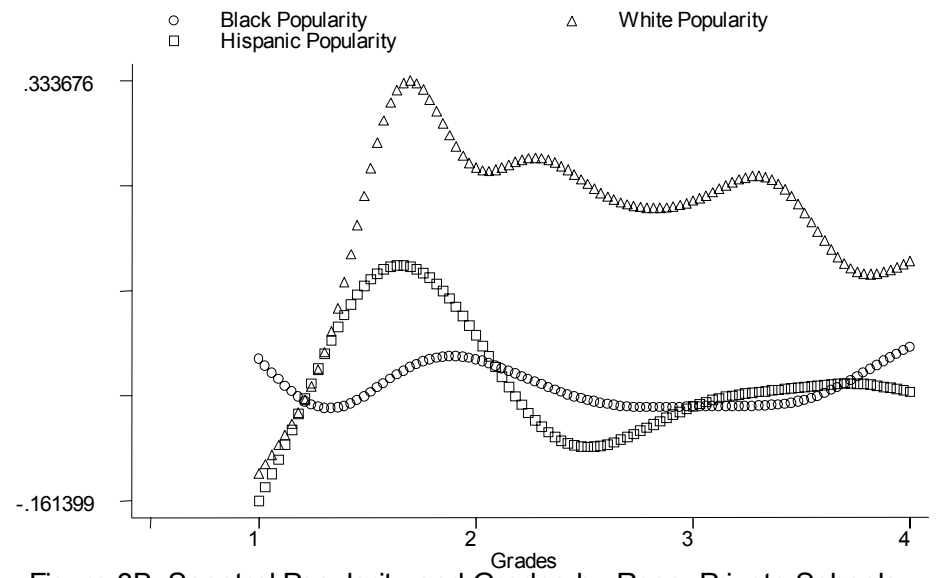Figure 3A: Spectral Popularity and Grades by Race, Public Schools

Figure 3B: Spectral Popularity and Grades by Race, Private Schools
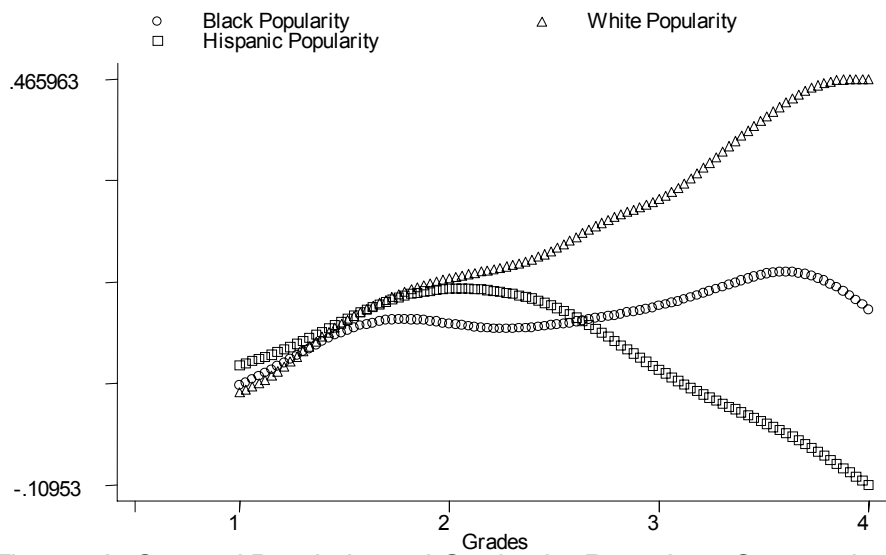
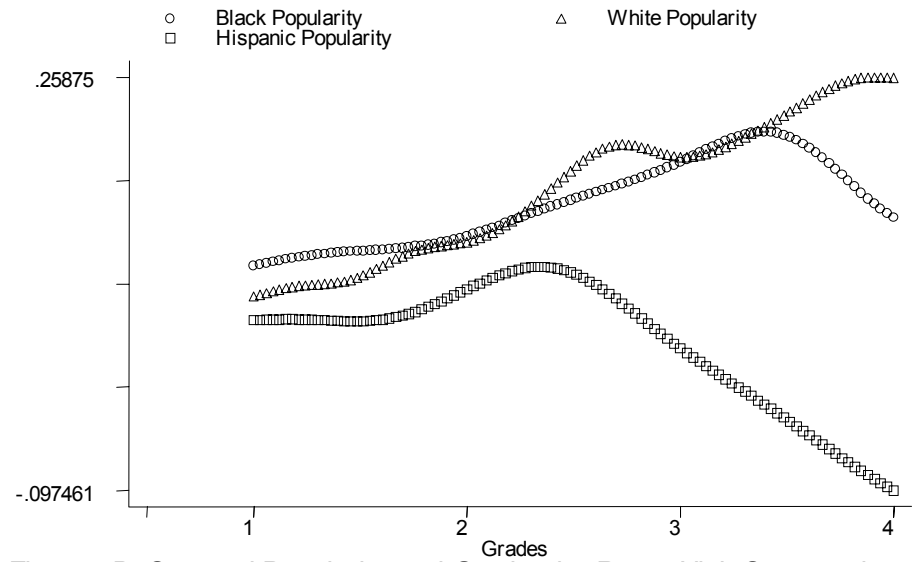Figure 4A: Spectral Popularity and Grades by Race, Low Segregation

Figure 4B: Spectral Popularity and Grades by Race, High Segregation