Race and Track Assignment in Public School

Samuel R. Lucas
University of California-Berkeley*

and

Mark Berends
Vanderbilt University

*We thank Grace K. Kim for providing the measures of racial diversity used in this paper, Liz Cohen and Magdelena Ruiz Gonzalez for helpful comments on an earlier draft, and Carl Mason for computing assistance. Research for this paper was suppported by a grant from the Field Initiated Studies Program, Office of Educational Research and Improvement, U.S. Department of Education, under grant number R305F960164 and by a grant from The Spencer Foundation, under grant number 199700213. However, this paper does not necessarily reflect the views of the granting agencies, and all errors are the reponsibility of the authors. We use HLM5.25 running on a Sun Microsystems E-450 with 2 CPUs and 4 GB of RAM in model estimation. All work for this paper was conducted with the assistance of the Demography Department of the University of California-Berkeley. A version of this paper was presented at the American Education Research Association Annual Meeting in New Orleans, LA, April 2002, and at the Center for Demography and Ecology 40th Anniversary Symposium, October 10-11, 2002, Madison Wisconsin.
Please direct all correspondence to Samuel R. Lucas / Sociology Department / University of California-Berkeley / 410 Barrows Hall #1980 / Berkeley, CA 94720-1980 or via e-mail to Lucas@demog.berkeley.edu

Abstract

Analyses of race and track assignment have found whites and Asians advantaged when compared to blacks and latino/as (e.g., Oakes 1985), black-white equality (e.g., Lucas and Gamoran 2002), and whites disadvantaged when compared to blacks (e.g., Garet and DeLany 1988). These and other studies used different samples and methods, and the divergent findings may flow from these differences in approach. Alternatively, schools may vary in their racial/ethnic gaps in track assignment, which could lead to contradictory findings on different samples. We explore both possibilities by investigating different operationalizations of track location and by allowing schools' racial gaps in track assignment to vary. We find that schools differ in the way they treat comparable students of different races, and this school-level variation is related to observable characteristics of schools. Indeed, race-linked assignments appear common in racially diverse schools, suggesting one way in which racial differences in skill may be produced in school. Theoretically, the findings alter the question researchers need ask. No longer should analysts focus on obtaining a point estimate of disparities track assignment by race, yet they must also avoid highlighting possibly atypical patterns. Instead, researchers must explore cross-school variation in order to discern when, where, and why there are racial differences in track assignment for comparable students.

Racial inequality in earnings, employment, and occupations in general, and black-white differences in these outcomes in particular, continue to be of interest to sociologists, other scholars, political actors, and the wider public (e.g., Cancio, Evans, and Maume, Jr., 1996; Petersen, Saporta, and Seidel 2000; Clogg, Eliason, and Leicht 2001; Smelser, Wilson, and Mitchell 2001; Loury 2002). Often, black-white inequality in and beyond the labor market is explained by reference to differences in skill owing to pre-labor market opportunities and experiences, opportunities and experiences that culminate in large race-linked differences in measured achievement (e.g., Farkas and Vicknair 1996). Given the importance of cognitive achievement for occupational and economic success, some analysts have contended that "reducing the black-white test score gap would do more to move America toward racial equality than any politically plausible alternative." (Jencks and Phillips 1998, p. 43). Hence, the focus has fallen on schools as a site in which adult racial inequality incubates.

Given that larger context, the important issue of equity in schooling can be raised in several ways and around several different issues. One such way concerns students location in stratified curricula in schools. Evidence suggests that different curricular locations have different resources--some have experienced committed teachers, while others have inexperienced and/or demoralized teachers--and different aims (e.g., Finley 1984; Oakes 1985). Perhaps owing to these resource differences, evidence suggests that curricular location matters for cognitive achievement even after the non-random assignment to locations has been controlled (e.g., Gamoran and Mare 1989). Indeed, Gamoran (1987) found the achievement gap between college preparatory and non-college preparatory students exceeded the gap between graduates and drop-outs. Thus, it appears that curricular locations matter for cognitive growth.

One might posit that racial differences in access to a challenging curriculum might play a role in the racial gap in measured achievement. On this important question, however, existing research remains contradictory.

In a nationally-representative sample of schools, Oakes (1985) showed that blacks and latino/as were more likely to be found in vocational and remedial classes. Yet, her analysis did not control for prior achievement or social class, two well-known correlates of later placement and achievement. Thus, a competing explanation for her finding is that blacks and latino/as are more likely to be socioeconomically disadvantaged and/or low achieving, and poor and/or low-achieving students are found in remedial and vocational classes. Consistent with this claim, Lucas and Gamoran (2002) analyzed nationally-representative data from the early 1980s and 1990s and found no net black-white difference in track assignment once achievement and social class were controlled. Further, Garet and DeLany (1988), using data drawn from four school districts in California, found a black *advantage* in assignment to high level math classes, after controlling for gender and achievement. But the Garet and DeLany results, as well as that of other researchers (e.g., Gamoran and Mare 1989), seem incongruous in the face of ethnographic evidence that blacks are systematically steered to lower-track classes (e.g., Lareau and Horvat 1999), and given district-level research showing disparate treatment of white and black students of equal achievement (e.g., Mickelson 2001). Thus, the one clear point is that research on race/ethnicity and track placement is quite varied in its findings.

One reason for the varied findings may be based in disparate measurement and analytic strategies in research on tracking. In some research the indicator of track location has been highly summarized. For example, Lucas and Gamoran (2002) dichotomize students' placement as either college preparatory or non-college preparatory. More recent research suggests that such summaries, for all their value in highlighting the key distinction for later student success, may miss important complexities concerning race/ethnicity and tracking (Lucas and Good 2001).

A second important type of summarization occurs when the pattern for many schools is described. Although studies have attended to school-to-school differences (e.g., Jones, Vanfossen, and Ensminger 1995; Mickelson 2001), analysts have yet to explore whether and why race/ethnicity effects on curricular placement may differ across schools. It may be that the existence and extent of racial differences in track assignment varies across schools, and may even be contingent on features of the school. If so, a summarized national picture of racial/ethnic differences in curricular assignment that does not account for school-to-school differences may obscure important relationships between race and opportunity in school.

That analysts have been unable to obtain a consistent estimate of the effect of race/ethnicity on track location heightens the necessity of assessing whether school-to-school differences in race/ethnicity effects exist. And, if they do exist, it then becomes important to assess the systemic factors associated with those differences.

In this paper we address both dimensions of summarization. We use multiple operationalizations of placement in the stratified curriculum, in order to explore and expose possible complexities in race and track assignment. And, we pursue the focal question of the paper by investigating school-to-school variation in placement probabilities by race. Although we do not address other key issues concerning the role of track placement in later adult attainments, a voluminous literature indicates the importance of track location and challenging classes for later success (e.g., Gamoran and Berends 1987; Kerckhoff 1986; Natriello, Pallas, and Alexander 1989). Given this literature, study of race and track placement contributes knowledge about how schools may or may not foster adult racial inequality by nurturing or neglecting the talents of adolescents. Hence, our findings engage the larger debate about racial inequality in the United States, by focusing on a key possible determinant of pre-labor market differences in skill.

Documenting Race and Track Assignment: Equivocal Evidence

Unbeknownst to many, the literature on race and track assignment has produced widely varying findings. Oakes (1985) reported that black and Latino/a students were more likely to be assigned to vocational and remedial classes. Lucas and Gamoran (2002), however, found a Latino/a disadvantage but no black-white difference in college prep track assignment for 1980 sophomores, and parity for blacks, whites, and Latino/as amidst an advantage for Asians in their analysis of 1990 sophomores. Garet and DeLany (1988) found that blacks and Asians were more likely to be assigned to advanced mathematics classes than were whites, whereas

Mickelson (2001) found the reverse for blacks in English classes. These disparate findings may be traced to at least three factors: 1)complexities of curriculum differentiation, 2)differences in research strategy, and 3)differences between schools.[1]

Complexity of Curriculum Differentiation

Curriculum differentiation--the division of a constructed field such as mathematics or English into subtopics that may or may not be ordered--is a staple of high school organization (e.g., Powell, Farrar, and Cohen 1985). Although consensus concerning the focal features of the curriculum exists, a measurement consensus has not yet emerged. Amidst the complexity and operationalizing without consensus, analysts have measured students' curricular placement in a variety of ways. The diversity of measures has given birth to a plethora of concepts.

One important conceptual distinction is between students' structural and social-psychological location in the stratified curriculum (e.g., Gamoran 1992). This distinction is akin to the distinction between social-psychological and material class location (e.g., Jackman and Jackman 1983). Although social-psychological track location has been demonstrated to have effects on outcomes of interest (e.g., Berends 1994), our interest is in students' placement in specific structural, curricular locations. The reason for this interest is we are concerned with school factors that might lead students of different racial/ethnic groups to be systematically allocated to different positions. Because our focus is on allocation--regardless of the likely role of volition

[1]Note that a fourth possibility--cross-time differences in school practice--is possible. We do not treat this possibility because there is insufficient data to evaluate this hypothesis.

in the allocation process--we attend to structural rather than social-psychological track location.

Differences in Research Strategy

Even if we confine our attention to those studies that have investigated students' structural locations in school, a second complexity is apparent--differences in research strategy. As Table 1 documents, analyses have not only operationalized curricular location in very different ways, they also have studied very different samples, used very different statistical models, and specified different sets of independent variables. This small selection of studies demonstrates the diversity of treatments and findings obtained. For example, Oakes' (1985) report that black and latino/a students are more likely to be assigned to vocational and remedial classes was based on an analysis that 1)used courses as the dependent variable, 2)did not control for any other factors that might matter for track assignment, and 3)based the analysis on a small set of nationally-representative schools. In contrast, in Garet and DeLany's (1988) analysis of assignment of students to mathematics and science courses they used 1)courses as the dependent variable, 2)controlled for gender, and 3)studied schools in 4 California districts. At the other end of all three spectra, Lucas and Gamoran (2002) used 1)a dichotomous measure of track location, 2)controlled for achievement in several domains, and disaggregated socioeconomic status into mother's education, father's education, father's occupation, family income, number of siblings, "broken" family, and farm background, and 3)used two widely-available nationally-representative samples with tens of thousands of students enrolled in hundreds of schools. These and other differences in research design may account for the differences in findings.

School-to-School Variation

An alternative possibility is that schools differ appreciably in the relationship between race and track assignment. If so, then the results different studies report could be sensitive to the kinds of schools present in the different samples. Further, if school-to-school variation underlies the disparate findings, obtaining a national estimate of the difference between different racial groups may be less illuminating than determining how similar students fare in different types of schools.

Although analysts have considered school variation in high school track assignment (e.g., Garet and DeLany 1988; Mickelson 2001), analysts have yet to explain the variation in a national sample of schools. Thus, the implications of this possibility for our understanding of race and track assignment remain relatively unexplored.

Investigating Disparate Findings

Exploring these different possibilities in an environment lacking consensus on the key features of curriculum differentiation requires considering different operationalizations of the dependent variable, different statistical models, different combinations of right-hand side variables, and use of a nationally-representative sample that allows an explicit focus on school-to-school differences. The purpose of such an exploration is not to adjudicate between the different studies, but, instead, to investigate race and track assignment in a way that accepts that disparate findings may have been produced by differences in research design, differences in the social world researchers aim to access, or both. Thus, in our approach we use multiple indicators of track location, allow schools to vary, and consider school-level factors that may alter the pattern of race and track assignment.

Theorizing Race and Track Assignment in Schools

Despite the equivocal nature of the evidence at the national level, there are good reasons to expect racial and ethnic differences in track assignment. We can identify five factors that might eventuate in racial/ethnic differences in track assignment in schools net of students' own characteristics: school poverty, governance, faculty sponsorship, a legacy of racial conflict, and racial/ethnic diversity. These factors can be further divided into two sets.

One set is composed of those factors that might explain *between-school* differences in track assignment. The reasoning behind these factors is they may be associated with high track placement. If schools vary by the factor, then, racial/ethnic school segregation may expose studenst of different races to different prospects for high-track placement. In other words, these factors occur in the context of wider processes that allocate students to different schools, affect the racial/ethnic composition of schools, and that therefore these assignment processes may disadvantage students concentrated in some types of schools.

The second set concerns those factors that might explain *within-school* differences in track assignment of blacks, Latino/as, and whites. These factors reflect potential differences in the treatment black, latino/a, and white students of equal achievement might receive in the same school.

Both sets of factors vary across schools, implying that, if they are at the root of racial/ethnic differences in track assignment, then there should be school-to-school variation in racial differences in track assignment. If so, the search for national-level differences in track assignment may have produced equivocal results because of a failure to attend to between-school processes that assign students to differently resourced schools *and* in-school processes that assign students to different places in the stratified curriculum in the same school.

School Poverty: A Between-School Factor

Analysts contend that impoverished schools may lack resources that are important both pedagogically and for curricular placement. For example, Betts et. al. (2000) found that 52 percent of classes in low-income schools in California met college prep requirements, while 63 percent of classes in affluent schools met college prep requirements.

Other research suggests that regardless of class, blacks are more likely to reside in racially segregated neighborhoods (e.g., Massey and Denton 1993, pp. 84-88). Further, given the presence of racial segregation, neighborhoods of blacks are more likely to be impoverished than neighborhoods of other groups owing to, if nothing else, historic redlining that has undercut the property values of black neighborhoods old and new. If funding for schools is connected to neighborhood resources, and poor schools have fewer opportunities for their students to take college prep courses, it is quite possible that racial/ethnic differences in college preparatory course-taking can be traced to differences in the resources available at the different schools students attend.

Governance: A Between-School Factor

Scholars have maintained that school governance may be a determinant of student outcomes. Researchers have highlighted contrasts between urban and suburban schools (e.g., Lippman, Burns, and McArthur 1996), public and private schools (e.g., Chubb and Moe 1988), and more (e.g., Gill, Timpane, and Brewer 2001). These categorical differences reflect potential or actual differences in governance, and hence school governance has been theorized as an important factor in student success.

Still, empirical research has been indeterminate on the role of governance in student achievement, as consideration of one of the most studied governance factors reveals. Coleman, Hoffer, and Kilgore (1982) claimed that public schools produce less cognitive achievement than Catholic schools. However, Goldberger and Cain (1982) correctly note that students are not randomly assigned to different school sectors, and that unmeasured factors may make it difficult to draw causal inferences as to the impact of schools in different sectors *per se*. Chubb and Moe (1988) counter, claiming that the very ability to select among private schools is an essential part of their advantage in producing achievement, such that controlling for unmeasured selection is inappropriate. With respect to tracking, although analysts find private school students more likely to be in higher tracks/more rigorous courses (e.g., Cookson and Persell 1985), research suggests that public and private schools have similar track structures (e.g., Lucas 1999, pp. 61-71), although the factors producing those structures differ (Lucas and Berends 2002), and although tracking may work differently in the two sectors owing to differences in instructional strategies (e.g., Gamoran 1993).

With respect to racial/ethnic differences in curricular placement, if blacks and latino/as are under-represented in schools whose governance structure results in higher rates of college preparatory course-taking, then disadvantages for blacks and/or latino/as may be connected to governance.

Faculty Sponsorship: A Within-School Factor

Research suggests that blacks and whites have different views of blacks. Schuman, et. al. (1997; pp. 156-157 and pp. 258-259) show that around the time of our study, 41 percent of whites viewed discrimination as a key cause of black-white inequality, whereas 79 percent of blacks saw discrimination as a key cause. In addition, only 35 percent of blacks felt that blacks' alleged lack of motivation was a key factor in racial inequality, while 61 percent of whites viewed lack of motivation on the part of blacks as a key cause. Evidence suggests white teachers are more likely than whites at-large or other white professionals to affirm non-racist positions (e.g., Lacy and Middleton 1981). Yet, a non-negligible proportion of white teachers report prejudicial attitudes.

These findings suggest it is quite possible that teachers of different races will evaluate the performance of students of different racial and ethnic groups differently.

Evidence certainly suggests, for example, that some black parents believe teachers variously ignore their childrens' potential or highlight their infractions while minimizing the same infractions when committed by others; the assessment of black parents is consistent with black teachers' reports of decision-making at the school (e.g., Lareau and Horvat 1999) and the research of social psychologists on the automaticity of prejudice (e.g., Dovidio, Evans, and Tyler 1986). Clearly, teachers are in a position to sponsor a child for upward mobility, or to ignore evidence of a child's promise. If teachers of different races not only interpret students' performances differently but, in actuality, literally *see* different performances, then the race of the teacher of the student, or the racial composition of teachers in a school, may affect the placement of students. We regard this particular mechanism, therefore, as a potential for *race-specific faculty sponsorship* or, for short, *faculty sponsorship*.

<u>Legacy of Racial Conflict: A Within-School Factor</u>

In every region of the nation, for over half a century, schools have been at the center of racial conflict in the United States. From the crisis of Federal precedence over state autonomy in the 1950s, which echoed the themes of this nation's civil war; to the urban battles and white riots associated with efforts to end *de jure* racial school segregation in the 1960s and 1970s, especially in the North; to the western-led campaign to end affirmative action in higher education in the 1990s--all these events and more suggest that racial conflict has *never* been fully resolved in the United States. Whatever tentative resolutions have been adopted, later conflict takes as a problematic point of departure. Indeed, so regular is this feature that some have pointed to it as an important factor in a seemingly endless process of racial formation (e.g., Omi and Winant 1994).

Given the anguish that overt racial conflict can unleash, it is possible that blacks and latino/as in schools with a visible legacy of racial conflict may pay a price in terms of prospects for advancement. Alternatively, it may be that only in schools whose legacies of racial conflict remain visible are black and latino students able to obtain the kind of support other students receive, for the very survival of the legacy may be a proxy for acquiescence to or support for efforts toward racial equality.

It is noteworthy that evidence is equivocal on whether black students in desegregated schools gain or not (e.g., Wells and Crain 1994; Braddock and McPartland 1982). Thus, the *a priori* indeterminance of whether a legacy of racial conflict is a net positive or negative for students of color is mirrored by dispute over whether the effects of desegregation are positive or negative. Given this state of affairs, it is worth exploring the potential role of a legacy of racial conflict in curricular assignment.

This factor is theorized as a within-school factor because the claim is *not* that blacks and Latino/as are concentrated in schools with legacies of racial conflict and such schools have different outcomes for the students who attend them compared to those who attend schools lacking a legacy of racial conflict. Instead, a legacy of racial conflict is expected to have different implications for students of different races in the same school. The impact of such a legacy is expected to be either 1)disadvantageous for blacks and latinos and perhaps advantageous for whites, 2)simply advantageous for blacks and latinos with no effect for whites, or 3)have no impact for any group.

Racial Diversity: A Within-School Factor

The racial composition of a school has been shown to affect track structure (e.g, Braddock 1990). Further, some research has shown that blacks and latino/as navigate a different track mobility regime than do whites (Lucas and Good 2001). Lucas and Good speculated that the advantageous assignment of white students may depend, in part, on the disadvantageous placements of blacks and latino/as. If so, racially diverse schools may provide a particularly disadvantageous environment for blacks and latino/as, and a particularly advantageous environment for whites.

Methods of Analysis

We use High School and Beyond (HS&B) Base Year (data collected 1980), First Follow-up (1982), High School Transcript (1983), and Administrator and Teacher (1982) data. The units of analysis for this study are students and schools. Given the relatively dated nature of the HS&B data, extended remarks concerning our selection of this dataset are in order. Clearly, more recent data are available, but owing to limitations of the more recent data for our purposes, HS&B data are best for our question.

Data

The National Educational Longitudinal Study (NELS) provides the most recent nationally-representative dataset, but it poses major problems for efforts to use multi-level modelling, the type of modelling necessary for our research question. Recall that a probability sample is one in which every member of the population has an in principle knowable, non-zero probability of selection into the sample (Kalton 1983). NELS is, by this definition, not a probability sample from the perspective one adopts when high schools are used as contexts in the multi-level modelling framework. The reasons for this limitation are many.

First, the sophomore and senior waves do not contain a representative sample of schools (Ingels, et. al., 1998). This problem occurs because the base-year sample was drawn in eighth grade, so that the eighth grade schools serve as a probability sample for all eighth grade schools in the nation. However, following the students who attended eighth grade schools two years later does not necessarily produce a probability sample of high schools.

A second, and for our purposes, more important problem with NELS, is that the eighth grade students in the base-year of NELS were drawn to be representative of their peers in the middle school in which the sample members were found. Two years later the students sampled in eighth grade no longer constitute, by themselves, a probability sample for the particular high schools in which they are enrolled. This problem arises because most schools with tenth grades are fed by more than one eighth grade school. Thus, when students sampled in any particular eighth grade school show up at the tenth grade, they fail to represent the students who entered the tenth grade school from other, non-sample, feeder eighth grade schools. If, for example, Kennedy Junior High was sampled in the base year of NELS, and Kennedy fed into Clinton High School, while other feeder schools into Clinton, such as Roosevelt and Reagan, were not in the NELS sample, using the students in the Clinton High School sample to represent the experience of Clinton High School students is inappropriate. It is inappropriate because students who entered Clinton from Reagan and Roosevelt (as well as other schools that may not "feed" Clinton) had no chance of being selected into the sample for Clinton High School. Hence, the NELS sample does not serve to represent the students inside any tenth grade school.[2]

For these reasons the use of multi-level techniques is technically incorrect for the later waves of NELS, for using multi-level models with NELS is to estimate statistical models on a non-probability sample of students within a non-probability sample of schools. In that case, calculation of t-values and coefficient confidence intervals is not defensible. In other words, one cannot use the apparatus of

[2]Indeed, project staff attempted to solve an analoguous problem for the tenth grade in the nation. The base year sample would not produce a nationally-representative tenth grade sample, because students who between 1988 and 1990 skipped a grade, immigrated into the nation, or were held back a grade, would not be represented. Project staff addressed this problem by freshening the sample in the following way. They obtained a roster of tenth graders from each high school in the study; the roster interspersed formerly sampled members and other students. They then focused on the student listed below the sampled student and asked whether the non-sampled student had been in the eighth grade two years earlier. If so, nothing was done, but if the non-sampled student had not been in the eighth grade two years previous, the non-sampled student was added to the sample. This procedure assured that tenth graders who had skipped a grade or been held back a grade in the previous two years were represented by the sample. Note, however, that this freshening procedure does not resolve the non-representativeness of the sample for the *school* in which students are enrolled in tenth grade. Had students also been added to the sample if they had attended a school other than the one attended by the original sample member, the freshening, with appropriate weights, would have resolved the second part of the problem. But the broader freshening was not conducted, perhaps owing to budget constraints. Whatever the reason the broader freshening was not conducted, the result is a NELS sample that remains problematic for multi-level analyses of students and schools in later waves.

inferential statistics to generalize beyond the sample of schools studied for multi-level analyses of NELS data.

Project staff recognized these problems and attempted to remedy them by drawing additional students and schools into the sample from a select group of districts. This High School Effectiveness Study (HSES) sample creates an appropriate probability sample of students within the selected schools, and the schools selected are a probability sample for large urban and suburban districts. These fixes are helpful for some purposes, most notably the development of a sample of schools representative of some population. Yet, one cannot generalize to the nation at large on the basis of the HSES sample. Because our concern is to interrogate the conflicting findings that have been obtained in analyses of nationally-representative samples, we must use a sample that allows consideration of the nation as a whole.[3]

Analysts have tried various solutions to these problems with NELS, such as, for example, constructing post hoc weights (e.g., Lee and Smith 1995). We believe one could construct post hoc weights that would allow the schools to be representative of the nation, but no post hoc weights can make the students sample representative of the school. For this reason, we are reluctant to construct post hoc weights for our study.

The Lee and Smith example suggest researchers are aware of the difficulties posed by the NELS design. Our response to these difficulties is to use HS&B instead

---

[3]Of the studies we have cited, only the Garet and DeLany and Mickelson analyses used samples that were not nationally-representative.

of the more recent NELS dataset. Constructing weights for the NELS data may be appropriate for some research questions, but our confidence in the HS&B design given our question leads us to use HS&B for our analyses.

Measurement

The measurement of most variables is straightforward. Thus, independent and dependent variables for both the student-level and the school-level, all of which are measured in tenth grade, are described in Table 2. Yet, a word need be said about our measure of track location, and how we theorize the school-level measures.

With respect to tracking, we use the course-based indicators of track location described by Lucas (1990; 1999). To allow our investigation to discern whether findings are sensitive to the degree of summarization we use two variables to capture track location. One, the trichotomous indicator, uses students' enrollment in college preparatory math, enrollment in non-college preparatory math, or failure to enroll in math as a dependent variable. Mathematics was selected because of the centrality of math to the high school curriculum. The second indicator is a course-based college prep/non-college prep dichotomy. The dichotomous indicator has the advantage of parsimony.

With respect to our school-level indicators, recall that we aim to assess each of the explanations we have listed above. We measure school poverty using the school's classification as a title 1 school, the natural log of the number of library books per student, whether the school has a library or not, and expenditures per child. Note that we do not use the school means of individual-level variables to measure school poverty or other school characteristics. Such measures are often all that analysts have available, but use of such measures in multi-level models endangers identification of parameters of interest (Hauser 1969; Manski 1995). For this reason we eschew summaries of individual-level reports as much as possible.

We measure governance using the natural log of the school size, and dummy variables for urban, rural, and south. The size of schools is a matter of policy and a feature of schools that is theoretically connected to the degree to which a school is bureaucratic. For this reason we regard school size as a matter of governance, a matter that may issue in many different consequences. Other school-level theories are assessed in a fairly straightforward way.

Analysis Plan

We estimate models of track location to assess the role of school-level factors in students' likelihood of entering more demanding classes. We focus on public schools because the debate about tracking highlights public schools.

Our research question is truly multi-level: are similar students of different races treated the same in different types of schools? Multi-level modelling is tailor-made for our research question. Because we operationalize track location in different ways in an effort to approximate some of the varying ways it has been treated in the literature, we will need to estimate two different types of multi-level models: 1)multi-level logistic regression models; and, 2)multi-level multinomial logit models.[4]

---

[4]We also estimated multi-level ordered logistic regression models. These models have a set of more restrictive assumptions, namely, that the categories line up in the same order and in the same exact locations across schools. In this specification we could find no

Multi-level Logistic Regression Models

We estimate models of the following form:

$$1a)\quad \log\left(\frac{p_{ij}}{1-p_{ij}}\right) = \beta_{1j} + \beta_{2j}\,Black_{ij} + b_{3j}\,Latinoa_{ij} + \beta_{4j}\,Asian_{ij} + b_{5j}\,OtherRace_{ij} + \sum_{k=6}^{K} \beta_k X_{ijk} + \epsilon_{ijk}$$

$$1b)\quad \beta_{1j} = \gamma_{01} + \delta_{1j}$$

$$1c)\quad \beta_{2j} = \gamma_{02} + \delta_{2j}$$

$$1d)\quad \beta_{3j} = \gamma_{03} + \delta_{3j}$$

$$1e)\quad \beta_{4j} = \gamma_{04} + \delta_{4j}$$

$$1f)\quad \beta_{5j} = \gamma_{05} + \delta_{5j}$$

where p_{ij} signifies the probability student *i* in school *j* will be in the college track, and Black, Latino/a, Asian, and Other Race are mutually exclusive race/ethnicity dummies with White as the omitted category, X_{ijk} signifies additional observed individual-level factors, ε_{ij} is an individual-level logistically distributed error term with mean zero and variance $\pi^2/3$, δ_j's signify school-level normally distributed error terms with mean zero and variance-covariance matrix T, and $\mathrm{cov}(\varepsilon,\delta_k)=0$. Equation 1a is at the student-level and captures individual-level factors expected to matter for track placement. Equations 1b through 1f are school-level equations in which the school-level intercept and the intercept-shift for different racial/ethnic groups are all allowed to vary across schools.

We proceed by first estimating models with only the varying parameters for race. These models approximate the assessment Oakes provided. With these models

---

evidence of school-level variation. However, because the assumption seemed to require much more data to assess than we have available in national datasets, and because existing studies suggest that categories may vary in their relative locations across districts (e.g., Hallinan 1992) and races (e.g., Lucas 1999, pp. 109-111), we do not present those results.

we investigate whether there are gross differences in track assignment by race, and whether these vary across schools. We then introduce the individual-level variables, and again allow all intercepts to vary. We then evaluate whether there is sufficient cross-school variation in each race-specific intercept-shift to allow one to model the variation. If so, we model the variation. We use multi-level logistic regression model when we operationalize track location as a college/non-college dichotomy.

Multi-level Multinomial Logit Models

Some research has modelled multiple categories of tracks using multinomial logistic regression (e.g., Garet and DeLany 1988; Jones, Vanfossen and Ensminger 1995; Lucas 1999). To match these analyses we estimate multi-level multinomial logit models of the following form:

$$
\begin{aligned}
2a)\quad & \log\,(p_{1ij} / p_{3ij}) = \beta_{11j} + \beta_{12j} Black_{ij} + b_{13j} Latinoa_{ij} + \\
& \beta_{14j} Asian_{ij} + b_{15j} OtherRace_{ij} + \sum_{k=6}^{K} \beta_1 k X_{ijk} + \epsilon_{1ij} \\
2b)\quad & \beta_{11j} = \gamma_{011} + \delta_{11j} \\
2c)\quad & \beta_{12j} = \gamma_{012} + \delta_{12j} \\
2d)\quad & \beta_{13j} = \gamma_{013} + \delta_{13j} \\
2e)\quad & \beta_{14j} = \gamma_{014} + \delta_{14j} \\
2f)\quad & \beta_{15j} = \gamma_{015} + \delta_{15j}
\end{aligned}
$$

$$
\begin{aligned}
3a)\quad & \log\,(p_{2ij} / p_{3ij}) = \beta_{21j} + \beta_{22j} Black_{ij} + b_{23j} Latinoa_{ij} + \\
& \beta_{24j} Asian_{ij} + b_{25j} OtherRace_{ij} + \sum_{k=6}^{K} \beta_k X_{ijk} + \epsilon_{2ij} \\
3b)\quad & \beta_{21j} = \gamma_{021} + \delta_{21j} \\
3c)\quad & \beta_{22j} = \gamma_{022} + \delta_{22j} \\
3d)\quad & \beta_{23j} = \gamma_{023} + \delta_{23j} \\
3e)\quad & \beta_{24j} = \gamma_{024} + \delta_{24j} \\
3f)\quad & \beta_{25j} = \gamma_{025} + \delta_{25j}
\end{aligned}
$$

where p_{3ij} signifies the probability student *i* in school *j* will be in the college prep math p_{2ij} signifies the probability student *i* in school *j* will be in the non-college prep math, p_{1ij} signifies the probability student *i* in school *j* will not take math, Black, Latino/a, Asian, and Other Race are mutually exclusive race/ethnicity dummies with White as the omitted category, X_{ijk} signifies additional observed individual-level factors, ε_{1ij} and ε_{2ij} are individual-level logistically distributed error terms with mean zero and variance $\pi^2/3$, δ_j's signify school-level normally distributed error terms with mean zero and variance-covariance matrix T, and $cov(\varepsilon_{cij},\delta_{ck})=0$. Equations 2a and 3a are at the student-level; other equations are school-level equations in which the school-level intercept and the intercept-shift for different racial/ethnic groups are all allowed to vary across schools. In this model the omitted dependent variable category is the college preparatory track. With this model it becomes possible to assess whether there are racial differences in assignment to some specific locations, allowing a more fine-grained analysis of race and track assignment.

In both modelling frameworks continuous student-level and school-level variables are centered around their grand means, so that the varying parameters reflect the experience of "average" students in "average" schools.

Results

Trichotomous Track Location

We first investigate whether there is discernible school-level variation in the race-specific intercepts when we use an unconditional model (i.e., no individual-level factors) and the trichotomous indicator of track location. The results, shown in Table

3, Panel 1, indicate that school-level variation in intercept-shifts is not discernibly different from zero. Yet, we were able to discern racial differences in track assignment. The picture that emerges is one of large differences in probabilities of track assignment connected to race. Asians have over an 80 percent chance of being in college prep math, whites have a 43 percent chance of taking college prep math, and blacks and Latinos have less than a 15 percent chance of taking college prep math. However, note that this model does not account for student social class and achievement. Thus, this model is analoguous to Oakes' model, and, as Oakes found, there are substantial gross differences in assignment probabilities.

These differences are somewhat reduced when individual-level factors are added to the model. As Table 4 (Panel 2) indicates, the black-white gap in college prep assignment reverses to become a slight black advantage, just as Gamoran and Mare found in their analysis of the dichotomous social-psychological indicator of track location. Yet, all groups continue to lag far behind Asians in prospects for college prep mathematics.

Table 4 (Panel 1) also reveals that once individual-level factors are controlled, we are able to discern statistically significant school-level variation for blacks and whites.[5] Panel 3 of Table 4 re-estimates this model, allowing only the intercepts and

---

[5]One reason for the lack of statistically significant variation for Asians and Latino/as may be that in order to raise the number of Asians and Latino/as, Asians and Latino/as were oversampled in schools with large numbers of them. This approach means that relatively few schools in the sample have Asians and Latino/as, reducing the ability of multi-level modelling to discern variation in intercept-shifts for these groups. Thus, further research on these groups with samples designed with this purpose in mind is needed.

the coefficients for black to vary. Results of this re-estimation support the contention that there is statistically significant school-level variation in these parameters, with the proviso that the only black coefficient with statistically significant variation is the one comparing non-college preparatory math and college preparatory math. Hence, in our multi-level multinomial logit models this is the only coefficient for black we allow to vary.

Given the existence of school-level variation, it is possible to explore school-level factors that might account for school-to-school differences. Table 5 contains results of our analysis of school-level variation in trichotomous track location; note that in Table 5 negative coefficients indicate the factor is *positively* associated with college prep course-taking.

The school poverty model suggests that school poverty matters for track placement. However, because the coefficients for school poverty in the black intercept-shift equation are not statistically significant, school poverty does not seem implicated in black/white differences in course-taking. The same seems to hold true for the governance model and the legacy of racial conflict model.

In contrast, the faculty sponsorship and racial diversity models seem implicated in black/white differences in course-taking. The presence of black faculty is associated with greater probabilities of college prep course-taking for both white students (as evidenced by the % black faculty coefficient in the intercept equation for the no math/college prep math comparison) and for black students (as evidenced by the % black faculty coefficient in the black equation for the college prep/non-college prep comparison). Predicted probabilities (not shown) suggest that higher percentages of black faculty are associated with a black advantage in college prep course-taking for black students compared to whites.

The racial diversity model is more equivocal. Although students appear more likely to take college prep math rather than to avoid math in more diverse schools, the racial diversity coefficients for the non-college prep/college prep comparison are opposite signed for black students compared to white students. It may be difficult to assess what is occurring here because, owing to insufficient school-level variance for the black intercept in the no math/college prep math comparison, essentially the model prevents school-level factors from altering the relationship between these two course locations for black and white students. Hence, this result remains unclear, and may become more clear when we turn to the analysis of the dichotomous indicator.

Still, racial differences in track assignment are visible when the less summarized indicator is used, and school-level variation is also visible once students' individual-level characteristics are controlled. The mix of findings suggests that school-level factors are implicated in the racial differences in track assignment. On this basis alone we may conclude that the national picture of tracking is more complex than a point estimate of the black-white difference might capture. Yet, a more parsimonious indicator of track location, one that highlights the distinction most relevant for students' later educational, occupational, and economic success, may bring the role of schools into shaper focus.

<u>Dichotomous Track Location</u>

To investigate whether students followed college preparatory or non-college preparatory curricula, we first estimated a model predicting dichotomous track location using only terms for the intercept, black, Latino/a, Asian, and Other race for students in public schools. This Unconditional Varying Intercepts Model 1 (UC1) allowed all five parameters to vary across schools. The results suggested that there was no statistically discernible variation in the intercept shift for Asians and for "Other race" (see Table 6). Hence, we retained these terms but did not allow them to vary across schools. UC Model 2 was the result, and the results of that model suggested there was no significant variation in the Latino/a coefficient across schools. Hence, we re-estimated the model fixing this parameter across schools, allowing only the intercept and the intercept-shift for black students to vary across schools. The resulting model, UC3, suggested that there was statistically discernible variation across schools in both the intercept (below the .001 level) and in the intercept-shift for blacks (at the .071 level).

Although the results suggest that only the intercept and the black coefficient varies across schools, all three unconditional models also suggest there are large and statistically significant differences in the probability that a student will be in the college preparatory track. UC Model 1 suggests that "other race" students have a one in six chance of being in the college track, blacks and Latino/as have a little more than one in five chance, whites have a little more than one in three chance, and Asians have nearly a three in four chance of being in the college track. These results replicate the common finding of far different gross likelihood of college track location associated with race, and are similar to the results produced in the multinomial logit models.

However, these models do not control for other factors that might be implicated in students' placements, most notably measured achievement and social background. The Conditional Varying Intercepts Model 1 (VC1) controls for measured achievement and social background and allows the intercept and all race/ethnicity coefficients to vary across schools. Again, no statistically discernible variation across schools was evident for the Asian and "Other race" coefficients. CV2 re-estimates the model allowing only the intercept and coefficients for Black and Latino/a to vary across schools. This model suggested no significant variation in the Latino/a coefficient. CV3 confirms the presence of statistically discernible variation in both the intercept and the coefficient for Black; we use this model as the baseline for further analysis of dichotomous track location in public school.

Table 7 contains results of CV3 as well as models with school-level covariates. The individual-level results are consistent with the findings of earlier research. As one would expect, measured achievement mattered for track placement, with higher achieving students being more likely to be placed in the college preparatory track. Gender is important, and socioeconomic status, as indexed by mother's education, family income, number of siblings, and family structure, is also important.

With respect to race the findings are intriguing. The results show black, white, and Latino/a parity. Yet, the results also show a statistically significant advantage for Asians in college preparatory track location. An Asian student at the mean in measured achievement and social background has over a fifty percent chance of being in the college track, while a comparable white, black, or Latino/a student has less than a thirty-three percent chance of being in the college track, and an "Other race" student has less than a twenty-five percent chance. Controlling for social background and measured achievement wipes out the gross average difference between blacks and Latino/as on the one hand and whites on the other. Still, it appears that, at least in the case of blacks and whites, there is important school-to-school variation in the probability of college track placement.[6]

The next model introduces terms capturing school poverty. The results suggest that school poverty matters. Note that aside from some very atypical schools that lack a library, and in which virtually all black students are in the college preparatory track, as volumes per student increase across schools so do the college track probabilities for blacks. This relationship is graphed in Figure 1, in which the solid line signifies blacks, the dotted line signifies whites, and the star signifies the mean for schools. An important feature of Figure 1 is the crossover in college prep probabilities. That is, in impoverished schools blacks are less likely to be in the college prep track than are comparable white students. However, in more wealthy

[6]These results, coupled with the analyses of trichotomous track location, together raise the reasonable question of why did we not focus our analysis on the difference between all other groups and Asians. The reason is that Asians are present in comparatively few schools in the sample, and in many school samples in which they are located they are sparsely represented. Both features make it more difficult to use Asians as the comparison group for multi-level modelling. Further research, however, should probe the difference between Asians and other racial and ethnic groups.

schools, as indexed by the number of library books per child, the chance that a black student is in the college track surpasses that of comparable white students. Thus, although at the mean blacks surpass whites in college prep probability, for substantial parts of the distribution whites surpass black chances of college prep placement.

The next two columns of Table 7 assess another explanation for school-to-school variation in race and track assignment. It appears that governance matters for college prep placement. Figure 2 illustrates the relationship between school size and college prep placement for suburban whites and blacks in the south and non-south. Blacks in small suburban schools, regardless of region, are very likely to be in the college track, while comparable whites in the south fare better than their non-south suburban peers. However, in schools at the mean in size (approximately 1075 students), white southerners have an advantage over south and non-south blacks, who have a slight advantage over whites outside the south. At larger school sizes, whites in and outside the south have a higher chance of college prep placement than do blacks. School size is associated with students' likelihood of placement in the college track, and has different implications for black and white students.

There is some slight evidence in favor of the faculty sponsorship model, but it is opposite that expected by theory and seems difficult to explain. Notably, the impact of black faculty for black students is no larger than its impact on the college prep course-taking chances of white students.

Similarly, the evidence suggests no role for a legacy of racial conflict. Note, however, that because we have no information on the timing of the desegregation order, we are unable to assess whether recency of the order matters. Suffice it to say, a legacy of racial conflict does not seem to play a discernible role in race and track assignment, when we focus on the most important curricular distinction.

In contrast, racial diversity *per se* does seem to matter, having diametrically opposite implications for black and white students. The more racial diversity there is, the more likely white students are to be in the college prep track and the less likely black students are to be in the college prep track. Lucas and Good (2001) speculated that the advantageous assignment of white students may depend, in part, on the disadvantageous placements of blacks and latino/as, which would imply that racially diverse schools may provide a particularly disadvantageous environment for blacks and latino/as, and a particularly advantageous environment for comparable whites. Figure 3 illustrates the implication of the coefficients for comparable whites and blacks, and shows that blacks in all-black schools are more likely to be in the college preparatory program than are comparable whites in all-white schools.[7] Yet, as we move to more and more racially diverse schools, we find lower and lower probabilities of college prep assignment for blacks and higher and higher probabilities for comparable whites.

[7]It is technically appropriate to estimate a black-white gap in college prep placement probabilities in monracial schools, given our model and estimation strategy. Multi-level models estimated with the EM-algorithm invoke a conditional exchangeability assumption that allows estimation of, for example, race gaps even for contexts that have no data for one of the groups. For an example analysis (of effects of LSAT scores on first year law school GPA) see Rubin 1989.

Table 8 contains results of an "Omnibus Model" which includes the best predictors from the theories most supported by the earlier analyses. It appears that governance (as reflected in school size and south/non-south location) and school diversity are associated with black-white differences in track location. The pattern for governance is virtually the same as in the governance model, but, owing to the introduction of an intercept shift for south, a shift that is statistically significant, the story with respect to racial diversity is altered in important ways. Figure 4 summarizes the implications of racial diversity for comparable southern and non-southern whites and blacks.

Essentially, there is no difference in the prospects of college preparatory track location for blacks regardless of region. In contrast, white southerners fare better than white non-southerners, and white southerners surpass comparable blacks in the likelihood of college prep placement at lower levels of racial diversity than white non-southerners do.

Collectively, these results reconcile much of the discrepancy evident in the literature. Blacks, Latino/as, and "other race" public school students are *less* likely to be in the college preparatory track than are whites, and Asians are *more* likely to be in the college preparatory track than are whites, when no covariates are considered. Adding measured achievement and social background to the model dissolves the average black, white, and Latino/a differences, leaving Asians advantaged compared to these groups and "other race" students disadvantaged compared to all other groups. Despite mean black/white equality, public schools vary appreciably in their black-white differences in college prep placement. Those differences are in part associated with governance, racial diversity, and perhaps school wealth, and the nature of the association is sufficient to make it quite likely that research showing black advantages and research showing black disadvantages can both be correct.

Concluding Remarks

Race and track assignment is a major educational, sociological, and public policy issue. And, as one might expect, it has been subjected to sustained scrutiny by social analysts. Yet, unlike in the case of a factor of comparable interest--social class--where findings concerning schooling have been largely consistent and contestation concerns the meaning of the findings (e.g., is it material resources, cultural capital, or some other mechanism that creates the consistent finding?), findings for race and track assignment have been inconsistent.

Our results suggest that part of the inconsistency appears related to different means of analyzing the phenomenon. For example, our inability to discern school-to-school variation in unconditional models that allow more track categories compared to our ability to find school-to-school variation for all other model specifications and dependent variables studied suggests findings are somewhat sensitive to the way in which track location is operationalized and the way in which models are specified.

However, by far the more important factor appears to be on-the-ground variation in schools' assignments of students to courses. This variation is connected in part to racial diversity, governance, and school poverty, and these differences may be sufficient to reconcile discrepant findings across existing studies of race and track assignment.

Substantively, we find that blacks may fare better than comparable whites in wealthy schools (although this result was not supported in the Omnibus model specification). Southern whites are advantaged compared to non-southern whites, and it takes less racial diversity for southern whites to begin to experience an advantage over comparable blacks in college prep placement than it does for non-southern whites. Yet our most important finding concerns school-level racial diversity; with respect to diversity, the pattern of results shown in Figures 3 and 4 are consistent with a "crowding out" hypothesis, in which whites in racially diverse schools crowd comparable blacks out of the college preparatory curriculum. We find that cognitively and socioeconomically comparable blacks in diverse schools are more likely to be placed in lower tracks than are whites.

Our findings reflect a great deal of complexity in race and track assignment. Collectively the results suggest that analysts need move beyond questioning whether track assignment advantages or disadvantages some racial groups to ask, instead, when, where, and why are comparable students of different races assigned to the same or different curricular locations. Ethnographic work, in-depth interviewing, detailed statistical analyses, and perhaps archival research on school policies and logics of course development, will all serve analysts well as they probe the phenomenon of race and track assignment.

More research is of course needed, for additional questions remain, even about our results. One important class of questions concerns the processes and mechanisms under-girding the patterns we observed. At present these remain opaque. It is easy to mention some speculative possibilities, however. Perhaps anti-intellectualism among black students in diverse schools, owing to the ostensible connection between acting white and academic achievement, leads blacks in such schools to avoid challenging classes (e.g., Fordham and Ogbu 1986). Although researchers have begun to intensely examine the "acting white" thesis and in doing so have considerably weakened its persuasiveness (e.g., Tyson 2002; Ainsworth-Darnell and Downey 1998; Cook and Ludwig 1998), it may still provide a viable explanation for track location differences by race. This remains an empirical question of some import.

Alternatively, perhaps school personnel are pressured by parents in-the-know and, in response, place white students ahead of black students in the queue for advantageous curricular positions. This is an obvious possibility, and one consistent with how we know schools often operate (e.g., Useem 1992). Further research will be needed to discover whether discriminatory allocational processes explain disparate track locations for comparable black and white students.

Questions are not limited to the issue of mechanisms. Very basically, it remains unclear whether our findings will be replicated in analyses of more recent cohorts. Evidence suggests that in the early 1990s more students followed college preparatory course-taking patterns (e.g., Berends, Lucas, and Briggs 2002). If so, school-to-school variation in racial differences in track location may have declined, as schools may vary less in overall college preparatory course-taking. Hence, as this example suggests, future analyses will be needed to assess the stability of our findings in a changing educational environment.

Although these questions for further research are important, the patterns we document are also important, and we suggest they should be read in the context of the larger debate concerning racial inequality in society. Many have argued that labor market disparities are connected to race-linked differences in cognitive achievement. And, some analysts have suggested that closing the black-white achievement gap is a politically palatable and potentially important strategy for ultimately reducing socioeconomic disparities between blacks and whites. Our findings certainly do not speak to the issue of political palatability directly, nor to the issue of how much black-white socioeconomic disparities could be reduced by equalizing cognitive achievement. Yet, they do suggest that a significant proportion of schools may not be operating in accord with this allegedly politically palatable option; instead, our findings suggest that, on the school-grounds, placing promising black students in challenging curricular locations is not necessarily a policy option enjoying widespread support. Further, if white students do crowd comparable black students out of more demanding classes in racially diverse schools, this may have implications for one's assessment of on-going trends toward re-segregation (Orfield and Eaton 1996).

In this connection, note that research has shown that racially diverse schools are more likely to have pronounced tracking systems (e.g., Braddock 1990; Lucas and Berends 2002). Our finding is that in diverse schools, schools likely to have more pronounced tracking systems, blacks fare less well than do comparable whites. In short, where blacks encounter students of other races, promising blacks enter lower track levels; where comparable blacks study alone, they enter the school's college preparatory curriculum. Although this finding does not allow one to infer what social actors in the wider society believe *should* be happening, it is not what one would expect to find were there widespread support for nurturing the cognitive capacities of black students. At the very least, these results suggest both policy-makers and social analysts need more investigation of and sensitivity to the possibly highly politicized nature of tracking and other resource allocational issues inside schools. At most, the results suggest there may be *no* support "out there" for raising the cognitive achievement of black students that will not crumble when real resources have to be re-allocated from one set of students to another (e.g., Lucas 2001).

Our results--that the role of race in track assignment varies across schools; that in some schools blacks are advantaged vis à vis whites, whereas in others blacks are disadvantaged; and that these differences connect to observable characteristics of schools, most notably school racial diversity--provide a basis for more focused and sustained research and activity around schools, race, and track assignment. And it is only such sustained, focused, activity that can deepen our sociological understanding of in-school processes of stratification, and perhaps even reveal the rhetorical resources one would need to activate were one interested in tapping whatever reservoir of support there may be for providing challenging oportunities for cognitive development to promising students regardless of race.

References

Ainsworth-Darnell, James W., and Douglas B. Downey. 1998. "Assessing the Oppositional Culture Explanation for Racial/Ethnic Differences in School Performance." *American Sociological Review* 63: 536-553.

Berends, Mark. 1994. "Educational Stratification and Students' Social Bonding to School." *British Journal of Sociology of Education* 16: 327-351.

Berends, Mark, Samuel R. Lucas, and R. J. Briggs. 2002. "Effects of Curricular Differentiation on Student Achievement: Longitudinal Analyses of High School Students". Paper presented at Research Seminar II: Instructional and Performance Consequences of High-poverty Schooling, The Charles Sumner School Museum and Archives, March 11, 2002.

Betts, Julian S., Kim. S. Rueben, and Anne Danenberg. 2000. *Equal Resources, Equal Outcomes? The Distribution of School Resources and Student Achievement in California*. San Francisco, CA: Public Policy Institute of California.

Braddock, Jomills Henry II. 1990. "Tracking the Middle Grades: National Patterns of Grouping for Instruction." *Phi Delta Kappan* 71:445-449.

Braddock, Jomills Henry II, and James M. McPartland. 1982. "Assessing School Desegregation Effects: New Directions in Research." *Research in Sociology of Education and Socialization* 3: 259-282.

Cancio, A. Silvia, T. David Evans, and David J. Maume, Jr. 1996. "Reconsidering the Declining Significance of Race: Racial Differences in Early Career Wages." *American Sociological Review* 61: 541-556.

Chubb, John E., and Terry M. Moe. 1988. "Politics, Markets, and the Organization of Schools." *American Political Science Review* 82: 1065-1087.

Clogg, Clifford C., Scott R. Eliason, and Kevin T. Leicht. 2001. *Analyzing the Labor Force: Concepts, Measures, and Trends*. New York: Kluwer Academic/Plenum Publishers.

Coleman, James S., Thomas Hoffer, and Sally Kilgore. 1982. *High School Achievement: Public, Catholic, and Private Schools Compared*. New York: Basic Books.

Cook, Philip J., and Jens Ludwig. 1998. "The Burden of 'Acting White': Do Black Adolescents Disparage Academic Achievement?" pp. 375-400 in *The Black-White Test Score Gap*, edited by Christopher Jencks and Meredith Phillips. Washington, DC: Brookings Institution Press.

Cookson, Jr., Peter W., and Caroline Hodges Persell. 1985. *Preparing for Power:*

America's Elite Boarding Schools. New York: Basic Books.

Dovidio, John F., Nancy Evans, and Richard B. Tyler. 1986. "Racial Stereotypes: The Contents of Their Cognitive Representations." *Journal of Experimental Social Psychology* 22: 22-37.

Farkas, George, and Keven Vicknair. 1996. "Appropriate Tests of Racial Wage Discrimination Require Controls for Cognitive Skill: Comment on Cancio, Evans, and Maume." *American Sociological Review* 61: 557-560.

Finley, Merilee K. 1984. "Teachers and Tracking in a Comprehensive High School." *Sociology of Education* 57: 233-243.

Fordham, Signithia, and John U. Ogbu. 1986. "Black Students' School Success: Coping with the Burden of 'Acting White'". *Urban Review* 18: 176-206.

Gamoran, Adam. 1992. "The Variable Effects of High School Tracking." *American Sociological Review* 57:812-828.

Gamoran, Adam. 1993. "Alternative Uses of Ability-Grouping in Secondary Schools: Can We Bring High-Quality Instruction to Low-Ability Classes?" *American Journal of Education* 102:1-22.

Gamoran, Adam, and Mark Berends. 1987. "The Effects of Stratification in Secondary Schools: Synthesis of Survey and Ethnographic Research." *Review of Educational Research* 57: 415-435.

Gamoran, Adam, and Robert D. Mare. 1989. "Secondary School Tracking and Educational Equality: Compensation, Reinforcement, or Neutrality?" *American Journal of Sociology* 94: 1146-1183.

Garet, Michael S., and Brian DeLany. 1988. "Students, Courses, and Stratification." *Sociology of Education* 61: 61-77.

Goldberger, Arthur S., and Glen Cain. 1982. "The Causal Analysis of Cognitive Outcomes in the Coleman, Hoffer, and Kilgore Report." *Sociology of Education* 55: 103-122.

Hallinan, Maureen T. 1992. "The Organization of Students for Instruction in Middle School." *Sociology of Education* 65: 114-127.

Hauser, Robert M. 1969. "Context and Consex: A Cautionary Tale." *American Journal of Sociology* 75: 645-664.

Ingels, Steven J., Leslie A. Scott, John R. Taylor, Jeffrey Owings, and Peggy Quinn. 1998. "National Education Longitudinal Study of 1988 (NELS:88) Base Year

Through Second Follow-up: Final Methodology Report." United States Department of Education Working Paper 98-06.

Jackman, Mary R., and Robert W. Jackman. 1983. *Class Awareness in the United States*. Berkeley: University of California Press.

Jencks, Christopher, and Meredith Phillips. 1998. "The Black-White Test Score Gap: An Introduction", pp. 1-51 in *The Black-White Test Score Gap*, edited by Christopher Jencks and Meredith Phillips. Washington, DC: Brookings Institution Press.

Jones, James D., Beth E. Vanfossen, and Margaret E. Ensminger. 1995. "Individual and Organizational Predictors of High School Track Placement." *Sociology of Education* 68: 287-300.

Kalton, Graham. 1983. *Introduction to Survey Sampling*. Beverly Hills: Sage Publications.

Kerckhoff, Alan C. 1986. "The Effects of Ability-Grouping in British Secondary Schools." *American Sociological Review* 51: 842-858.

Lacy, William, and Ernest Middleton. 1981. "Are Educators Racially Prejudiced? A Cross-Occupational Comparison of Attitudes." *Sociological Focus* 14: 87-95.

Lareau, Annette, and Erin McNamara Horvat. 1999. "Moments of Social Inclusion and Exclusion: Race, Class, and Cultural Capital in Family-School Relationships." *Sociology of Education* 72: 37-53.

Lee, Valerie E., and Julia B. Smith. 1995. "Effects of High School Restructuring and Size on Early Gains in Achievement and Engagement." *Sociology of Education* 68: 241-270.

Loury, Glenn C. 2002. *The Anatomy of Racial Inequality*. Cambridge, MA: Harvard University Press.

Lucas, Samuel R. 1990. "Course-Based Indicators of Curricular Track Location." Unpublished Masters' Thesis, University of Wisconsin-Madison.

Lucas, Samuel Roundfield. 1999. *Tracking Inequality: Stratification and Mobility in American High Schools.* New York: Teachers College Press.

Lucas, Samuel R. 2001. "Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects." *American Journal of Sociology* 106: 1642-1690.

Lucas, Samuel R., and Mark Berends. 2002. "Sociodemographic Diversity, Correlated

Achievement, and De Facto Tracking." *Sociology of Education* 75:

Lucas, Samuel R., and Adam Gamoran. 2002. "Tracking and the Achievement Gap," pp. 171-198 in *Bridging the Gap*, edited by John E. Chubb and Tom Loveless. Washington, DC: Brookings Institution Press.

Lucas, Samuel R., and Aaron D. Good. 2001. "Race, Class, and Tournament Track Mobility." *Sociology of Education* 74: 139-156.

Manski, Charles F. 1995. *Identification Problems in the Social Sciences*. Cambridge, MA: Harvard University Press.

Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.

Mickelson, Roslyn Arlin. 2001. "Subverting Swann: First- and Second-Generation Segregation in Charlotte-Mecklenberg Schools." *American Educational Research Journal* 38: 215-252.

Natriello, Gary, Aaron M. Pallas, and Karl Alexander. 1989. "On the Right Track? Curriculum and Academic Achievement." *Sociology of Education* 62: 109-118.

Oakes, Jeannie. 1985. *Keeping Track: How Schools Structure Inequality*. New Haven, Connecticut: Yale University Press.

Omi, Michael, and Howard Winant. 1994. *Racial Formation in the United States: From the 1960s to the 1990s, second edition*. New York: Routledge.

Orfield, Gary S, Eaton, Susan E., and the Harvard Project on School Desegregation. 1996. *Dismantling Desegregation: The Quiet Reversal of Brown v. Board of Education*. New York: New Press.

Petersen, Trond, Ishak Saporta, and Marc-David L. Seidel. 2000. "Offering a Job: Meritocracy and Social Networks." *American Journal of Sociology* 106: 763-816.

Powell, Arthur G., Eleanor Farrar, and David K. Cohen. 1985. *The Shopping Mall High School: Winners and Losers in the Educational Marketplace.* Boston: Houghton Mifflin.

Rubin, Donald B. 1989. "Some Applications of Multilevel Models of Educational Data," pp. 1-17 in *Multilebel Analysis of Educational Data*, edited by R. Darrell Bock. Berkeley, CA: Academic Press.

Schuman, Howard, Charlotte Steeh, Lawrence Bobo, and Maria Krysan. (1985) 1997. *Racial Attitudes in America: Trends and Interpretations*. Cambridge, MA: Harvard University Press.

Smelser, Neil J., William Julius Wilson, and Faith Mitchell. 2001. *America Becoming: Racial Trends and Their Consequences, Volumes 1 and 2*. Washington, DC: National Research Council.

Stevens, Gillian, and Joo Hyun Cho. 1985. "Socioeconomic Indexes and the New 1980 Census Occupational Classification Scheme." *Social Science Research* 14: 142-168.

Tyson, Karolyn. 2002. "Weighing In: Elementary-Age Students and the Dabate on Attitudes toward School among Black Students." *Social Forces* 80: 1157-1189.

Useem, Elizabeth. 1992. "Middle Schools and Math Groups: Parents' Involvement in Childrens' Placement." *Sociology of Education* 65: 263-279.

Wells, Amy Stuart, and Robert L. Crain. 1994. "Perpetuation Theory and Long-Term Effects of School Desegregation." *Review of Educational Research* 64: 531-555.

Table 1 -- Selected Studies of Race and Curricular Assignment in Secondary School

Study	Sample	Dependent Variable	Key Controls	Statistical Model	Key Finding
Social-Psychological					
Gamoran and Mare 1989	HS&B	College/non-college dichotomy	SES, Achievement, Gender	Endogenous Switching Regression	Black Advantage
Jones, Vanfossen, and Ensminger 1995	HS&B	General, College Prep, Vocational Trichotomy	SES, Gender, Achievement	Multinomial Logit	Black Advantage
Structural Track					
Oakes 1985	National Representative	Vocational and Remedial Courses versus Others	None	None[1]	Black and Latino/a Disadvantage
Garet and DeLany 1989	Four CA districts	Math and Science Courses	Gender	Multinomial Logit	Black and Asian Advantage
Mickelson 2001	Charlotte, NC	English Courses	SES, Cultural Capital, Gender	Multi-level Regression	Black Disadvantage
Lucas and Gamoran 2002	HS&B and NELS	College/non-college dichotomy	Disaggregated SES, Achievement, Gender	Endogenous Switching Regression	Consistent black-white parity; 1980 Latino Disadvantage, 1990 Asian Advantage

[1] No explicit statistical model is provided.

Table 2 -- Independent Variables

All variables are recoded to the midpoint for missing cases. In the models a control for missing on each particular variable is used.

STUDENT LEVEL

Black, White, Latino/a, Asian, Other are mutually-exclusive categorizations of students' racial/ethnic group drawn from student reports.

Female is a dummy variable drawn from student self-reports.

Mother's and Father's Education was measured by student reports of mother's and father's education, scored ranging from 10 years to 18 years of schooling.

Father's Occupation was measured by student responses to a 17 category question, which were recoded to the 1980 SEI score of the mean of the illustrative occupations in the questionnaire using Stevens and Cho's (1985) updated occupational scores for total labor force based on the 1980 census. Homemakers and military were coded as missing given that there is no SEI code for those pursuits.

Family Income was measured by student reports of family income, recoded to the mid-point of categories.

Siblings is the number of brothers and sisters reported by the student.

Broken Family is scored 0 if the child lived with mother and father in sophomore year, and zero otherwise.

Seven 10th grade tests in **Math 1** (range 0-28), **Math 2** (0-10), **Reading** (0-19), **Vocabulary** (range 0-21), **Writing** (0-17), **Science** (0-20), and **Civics** (0-10) are used to measure prior achievement.

SCHOOL LEVEL

School Poverty
Principal reports of 1)whether the school is a **Title 1** school, 2)the natural log of the number of **Library Volumes per child**, 3)whether the school has a **Library or Not**, and 3)the **Expenditures Per Student.** (No library)

Governance
Dummy variables for **Urban**, **Rural**, and **South. Size** of school is the principal's report of the total enrollment of students; we use the natural log of the total enrollment.

Faculty Sponsorship
Principal reports of the percentage of faculty who are **Black.**

Legacy of Racial Conflict
Principal reports of 1)the proportion of students **Bused** into the school for racial balance and 2)whether the school is under a **Desegregation** order.

Racial/Ethnic Diversity
Principal reports of the proportion of students who are white, Black, Latino/a, Asian, or Native American, coupled with principal reports of the number of students in the school, is used to construct a measure of the incidence of racial/ethnic diversity, calculated as follows. If $k>1$ then $D_s = (k(N^2 - \Sigma f_{sk}^2)) / (N^2(k-1))$; if $k=1$ then $D_s = 0$, where k is the number of racial groups in the school, N is the total number of students in the school, and f_{sk} is the number of persons of race k in school s.

Table 3 -- Unconditional Multi-Level Multinomial Logistic Regression Model and Tests of Varying Race/Ethnicity Coefficients, Trichotomous Mathematics Track Assignment, Public Schools (n=798) and Students (n=11211)

Panel 1--Model Coefficients

Unconditional Model	Parameter	Coeff	S.E.	Var Component	P-val
College Prep Math vs. No Math					
	Intercept	-1.379*	0.055	1.0231	>0.500
	Black	0.301	0.111	0.1864	>0.500
	Latino/a	0.491*	0.086	0.1825	>0.500
	Asian	-1.818*	0.342	0.1740	>0.500
	Other	0.651*	0.215	0.1264	>0.500
College Prep Math vs. Non-College Prep Math					
	Intercept	-0.534*	0.044	0.7448	0.001
	Black	0.939	0.076	0.0122	0.168
	Latino/a	0.819*	0.063	0.0016	0.310
	Asian	-1.528*	0.226	0.0240	0.428
	Other	0.971*	0.163	0.0157	>0.500

Italics denote varying coefficients, * signifies parameter discernibly different from zero at or below α=.05

Panel 2 -- Probablities of Track Assignment

	No Math	Non-Coll Prep	Coll Prep
Intercept	.201	.370	.429
Black	.254	.600	.146
Latino/a	.292	.571	.138
Asian	.039	.113	.848
Other	.326	.608	.067

Numbers may not add up to 1 due to rounding.

Table 4 -- Conditional Multi-Level Multinomial Logistic Regression Models and Tests of Trichotomous Mathematics Track Assignment, Public Schools (n=798) and Students (n=11211)

Panel 1--Selected Model Coefficients, Conditional Model 1

	Parameter	Coeff	S.E.	Var Component	P-val
Model 1 -- College Prep Math vs. No Math					
	Intercept	-1.380*	0.080	1.3007	0.128
	Black	-0.490*	0.125	0.5442	>0.500
	Latino/a	-0.197*	0.097	0.1895	>0.500
	Asian	-1.187*	0.353	0.0937	>0.500
	Other	0.018	0.227	------	------
Model 1 -- College Prep Math vs. Non-College Prep Math					
	Intercept	-0.504*	0.064	0.7448	0.002
	Black	0.068	0.093	0.0122	0.025
	Latino/a	0.082	0.075	0.0016	>0.500
	Asian	-1.066*	0.262	0.0240	>0.500
	Other[1]	0.323*	0.181	------	------

Italics denote varying coefficients, * signifies parameter discernibly different from zero at or below α=.05

[1] Could not allow Other to vary in this model, for to do so would have allowed no degrees of freedom for the test of school-level variance.

Panel 2 -- Conditional Probablities of Track Assignment

	No Math	Non-Coll Prep	Coll Prep
Intercept	.201	.377	.422
Black	.134	.393	.474
Latino/a	.171	.397	.433
Asian	.071	.172	.756
Other	.204	.455	.341

Numbers may not add up to 1 due to rounding.

Panel 3--Selected Model Coefficients, Conditional Model 2

	Parameter	Coeff	S.E.	Var Component	P-val
Model 2 -- College Prep Math vs. No Math					
	Intercept	-1.387*	0.079	1.4511	≤0.001
	Black	-0.483*	0.123	0.3887	>0.500
	Latino/a	-0.211*	0.092	------	------
	Asian	-1.257*	0.329	------	------
	Other	0.020	0.209	------	------
Model 2 -- College Prep Math vs. Non-College Prep Math					
	Intercept	-0.503*	0.063	1.0560	≤0.001
	Black	0.063	0.092	0.1900	0.004
	Latino/a	0.053	0.070	------	------
	Asian	-1.006*	0.245	------	------
	Other	0.329*	0.170	------	------

Italics denote varying coefficients, * signifies parameter discernibly different from zero at or below α=.05

Panel 4 -- Conditional Probablities of Track Assignment

	No Math	Non-Coll Prep	Coll Prep
Intercept	.200	.377	.423
Black	.134	.392	.475
Latino/a	.168	.389	.442
Asian	.067	.181	.753
Other	.203	.457	.340

Numbers may not add up to 1 due to rounding.

Table 5 -- Selected Coefficients, Conditional Multi-Level Multinomial Logistic Regression Models of Trichotomous Mathematics Track Assignment, Public Schools (n=798) and Students (n=11211)

Col Prep Omitted	No Math		Non-College Prep	
Parameter	Coeff	S.E.	Coeff	S.E
School Poverty Model				
Intercept	-1.447*	0.124	-0.425*	0.101
Title 1	0.100	0.117	-0.051	0.099
Ln (Lib Vols/Child)	0.208*	0.096	-0.168*	0.082
No Library	0.466	1.058	0.301	0.904
$1000/child	0.168	0.096	0.110	0.082
Black	-0.488*	0.126	-0.108	0.161
Title 1	-------	------	0.050	0.160
Ln (Lib Vols/Child)	-------	------	-0.130	0.133
No Library	-------	------	-2.214	1.469
$1000/child	-------	------	0.081	0.128
Governance Model				
Intercept	1.427*	0.607	-0.852	0.557
Ln(size)	-0.365*	0.084	0.077	0.077
Urban	-0.097	0.140	-0.175	0.121
Rural	0.046	0.136	-0.203	0.119
South	-0.904*	0.121	-0.280*	0.101
Black	-0.320*	0.128	-1.357	1.028
Ln(size)	-------	------	0.208	0.138
Urban	-------	------	-0.049	0.175
Rural	-------	------	0.077	0.236
South	-------	------	-0.003	0.166
Faculty Sponsor Model				
Intercept	-1.431*	0.084	-0.493*	0.067
% Black Faculty	-0.019*	0.004	-0.001	0.004
Black	-0.256	0.131	0.274*	0.010
% Black Faculty	-------	------	-0.014*	0.004
Legacy of Racial Conflict Model				
Intercept	-1.296*	0.085	-0.485*	0.069
% Bused	0.002	0.007	-0.000	0.007

Col Prep Omitted	No Math		Non-College Prep	
Parameter	Coeff	S.E.	Coeff	S.E
Desegregation Order	-0.598*	0.145	-0.131	0.122
Black	-0.394*	0.127	0.073	0.115
% Bused	-------	------	0.007	0.006
Desegregation Order	-------	------	-0.055	0.160
Racial Diversity Model				
Intercept	-1.431*	0.084	-0.515*	0.067
Index of Racial Diversity	-0.970*	0.195	-0.265	0.164
Black	-0.382*	0.129	0.066	0.114
Index of Racial Diversity	-------	------	0.262	0.277

Italics denote varying coefficients, * signifies parameter discernibly different from zero at or below α=.05

Table 6 -- Tests of Varying Race/Ethnicity Coefficients in Multi-level Binary Logistic Regression Models of Dichotomous Track Assignment, Public Schools (n=798) and Public School Students (n=11211)

Model	Parameter	Coeff	S.E.	Prob Col Prep	Var Component	P-val
Uncond Varying 1	*Intercept*	-0.552*	0.046	.365	1.0215	≤0.001
	Black	-0.681*	0.084	.226	0.5964	0.091
	Latino/a	-0.767*	0.067	.211	0.2367	0.030
	Asian	1.567*	0.237	.734	0.2278	≥0.500
	Other	-1.063*	0.192	.166	0.5264	≥0.500
Uncond Varying 2	*Intercept*	-0.555*	0.046	.365	1.0407	≤0.001
	Black	-0.676*	0.085	.226	0.6790	≤0.001
	Latino/a	-0.759*	0.067	.212	0.2517	≥0.500
	Asian	1.501*	0.217	.720	-------	------
	Other	-0.975*	0.173	.178	-------	------
Uncond Varying 3	*Intercept*	-0.553*	0.046	.365	1.0332	≤0.001
	Black	-0.689*	0.084	.224	0.4816	0.071
	Latino/a	-0.751*	0.063	.213	-------	------
	Asian	1.502*	0.217	.721	-------	------
	Other	-0.979*	0.173	.178	-------	------
Cond Varying 1	*Intercept*	-0.883*	0.068	.293	1.7610	≤0.001
	Black	0.159	0.100	.327	1.1879	0.228
	Latino/a	-0.019	0.075	.289	0.3761	0.162
	Asian	1.002*	0.272	.530	0.5726	≥0.500
	Other	-0.449*	0.209	.209	0.8424	≥0.500
Cond Varying 2	*Intercept*	-0.885*	0.068	.292	1.7688	≤0.001
	Black	0.160	0.101	.326	1.2927	≤0.001
	Latino/a	-0.013	0.076	.289	0.4473	0.396
	Asian	0.987*	0.240	.525	-------	------
	Other	-0.373*	0.189	.221	-------	------
Cond Varying 3	*Intercept*	-0.871*	0.067	.295	1.6537	≤0.001
	Black	0.143	0.099	.326	0.9243	0.008
	Latino/a	-0.058	0.072	.283	-------	------
	Asian	0.981*	0.238	.527	-------	------
	Other	-0.375*	0.188	.223	-------	------

Varying coeffs italicized, *=parameter discernibly differs from zero α≤.05

Table 7 -- Multi-level Logistic Regression Models of Between-School Factors in Race and Track Assignment, Public Schools (n=798) and Students (n=11211)

	I-level Model		School Poverty		Governance	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Intercept	-0.871*	0.067	-0.867*	0.111	-1.025*	0.095
Title 1			-0.038	0.113		
Ln(Lib Vols/Child)			0.009	0.094		
No Library			0.111	1.039		
$1000/child			-0.086	0.093		
Ln(Size)					0.189*	0.086
Urban					0.057	0.138
Rural					0.075	0.134
South					0.395*	0.115
Black	0.143	0.099	0.363*	0.184	0.260	0.185
Title 1			-0.209	0.192		
Ln(Lib Vols/Child)			0.518*	0.163		
No Library			4.140*	1.549		
Ln($/child)			-0.187	0.155		
Ln(Size)					-0.598*	0.163
Urban					-0.007	0.213
Rural					-0.262	0.279
South					-0.088	0.202
Latino/a	-0.058	0.072	-0.061	0.072	-0.080	0.072
Asian	0.981*	0.238	0.976*	0.238	0.969*	0.238
Other	-0.375*	0.188	-0.383*	0.188	-0.380*	0.189
Female	0.400*	0.050	0.400*	0.050	0.400*	0.050
Father's Ed	0.021	0.014	0.021	0.014	0.021	0.014
Mother's Ed	0.057*	0.015	0.057*	0.015	0.058*	0.015
Fathers Occ	0.001	0.001	0.001	0.001	0.001	0.001
Family Income	0.011*	0.003	0.011*	0.003	0.011*	0.003
Siblings	-0.042*	0.017	-0.042*	0.017	-0.040*	0.017
Broken Family	-0.172*	0.069	-0.172*	0.069	-0.172*	0.069
Math 1	0.144*	0.008	0.145*	0.008	0.145*	0.008
Math 2	0.018	0.017	0.018	0.017	0.018	0.017
Reading	0.017	0.011	0.016	0.011	0.017	0.011

	I-level Model		School Poverty		Governance	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Vocabulary	0.025*	0.009	0.026*	0.009	0.025*	0.009
Writing	0.058*	0.011	0.057*	0.010	0.058*	0.010
Science	0.002	0.011	0.002	0.011	0.004	0.011
Civics	0.074*	0.016	0.074*	0.016	0.073*	0.016

Italics denote varying coefficients, * signifies parameter discernibly different from zero at or below α=.05

Table 7, continued

	Faculty Sponsor Model		Legacy of Racial Conflict		Racial Diversity	
	Coeff	S.E.	Coeff	S.E.	Coeff	S.E.
Intercept	-0.881*	0.069	-0.892*	0.072	-0.864*	0.069
% Black Fac	0.015*	0.004				
% Bused			-0.001	0.007		
Deseg Order			0.120	0.140		
Diversity					0.703*	0.184
Black	0.008	0.113	0.208	0.124	0.223	0.123
% Black Fac	0.004	0.005				
% Bused			-0.007	0.009		
Deseg Order			-0.078	0.201		
Diversity					-0.856*	0.339
Latino/a	-0.070	0.072	-0.060	0.072	-0.097	0.072
Asian	0.979*	0.238	0.983*	0.238	0.942*	0.237
Other	-0.385*	0.189	-0.380*	0.188	-0.390*	0.188
Female	0.399*	0.050	0.400*	0.050	0.400*	0.050
Father's Ed	0.022	0.014	0.021	0.014	0.021	0.014
Mother's Ed	0.057*	0.015	0.057*	0.015	0.057*	0.015
Fathers Occ	0.001	0.001	0.001	0.001	0.001	0.001
Family Income	0.011*	0.003	0.011*	0.003	0.011*	0.003
Siblings	-0.042*	0.017	-0.042*	0.017	-0.041*	0.017
Broken Family	-0.179*	0.069	-0.171*	0.069	-0.173*	0.069
Math 1	0.145*	0.008	0.144*	0.008	0.144*	0.008
Math 2	0.019	0.017	0.018	0.017	0.018	0.017
Reading	0.016	0.011	0.017	0.011	0.016	0.011
Vocabulary	0.025*	0.009	0.025*	0.009	0.024*	0.009
Writing	0.058*	0.010	0.058*	0.010	0.058*	0.010
Science	0.004	0.011	0.002	0.011	0.003	0.011
Civics	0.074*	0.016	0.074*	0.016	0.075*	0.016

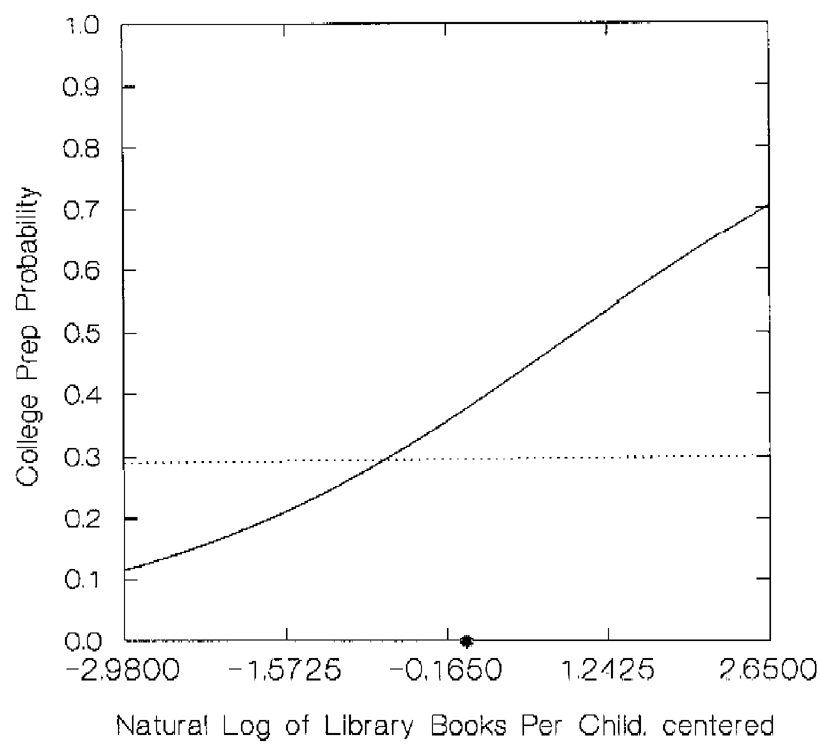
Italics=varying parameters, *=estimate discernibly different from zero $\alpha \leq .05$

Table 8 -- Selected Coefficients from Omnibus Multi-level Logistic Regression Model of Within-School Factors in Race and Track Assignment, Public Schools (n=798) and Students (n=11211)

	Omnibus Model	
	Coeff	S.E.
Intercept	-0.948*	0.079
Ln(Lib Vols/Child)	0.159	0.112
No Library	0.704	1.068
Ln(Size)	0.195*	0.092
South	0.299*	0.121
Diversity	0.499*	0.198
Black	0.270	0.151
Ln(Lib Vols/Child)	0.204	0.197
No Library	2.745	1.594
Ln(Size)	-0.342	0.176
South	0.040	0.204
Diversity	-0.898*	0.345

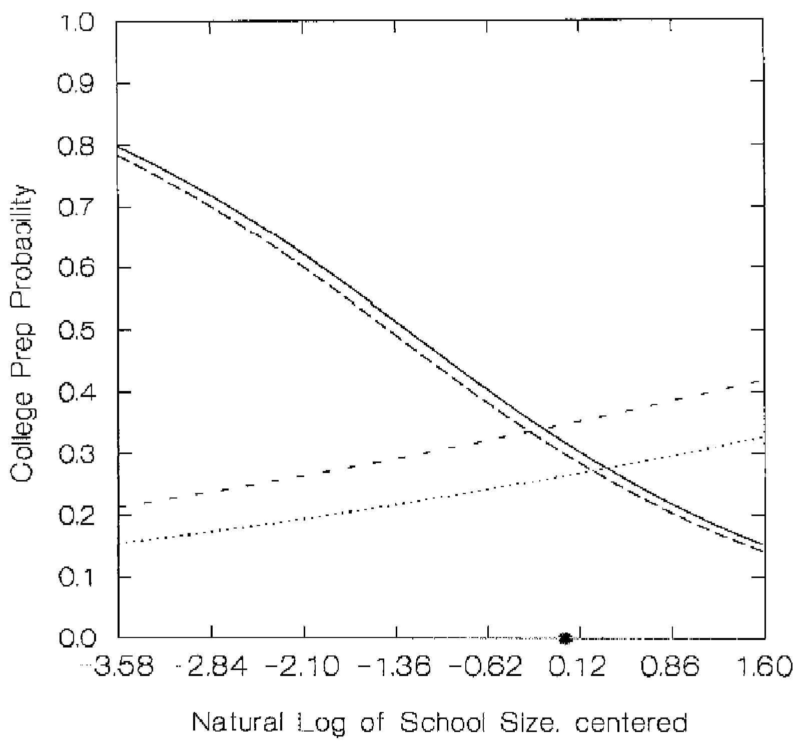
Italics=varying parameters, *=estimate discernibly different from zero $\alpha \leq .05$

Fig 1--Col Prep Prob By School Wealth and Student Race



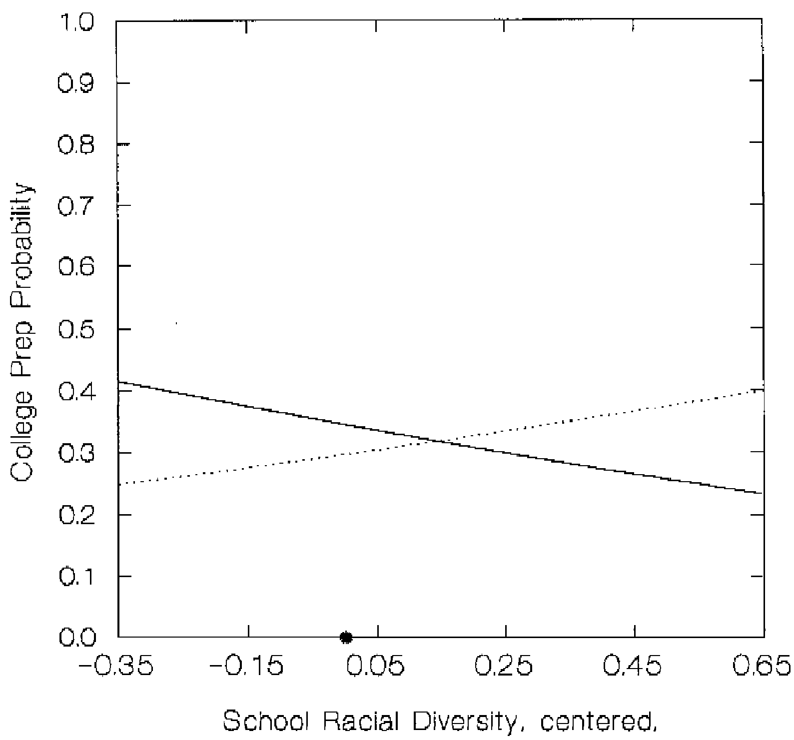
________ Blacks .... whites

2 --College Prep Probability By Size, Region, and Student F



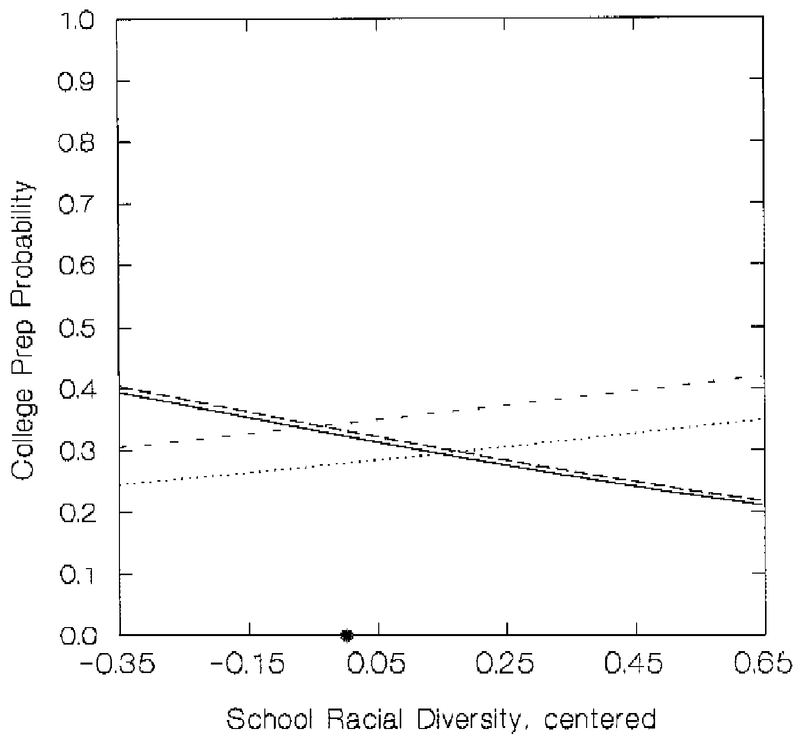
_______ Blacks, South
- - - - Blacks, Non-South
-   -   - Whites, South
.... Whites, Non-South

g 3--College Prep Probability By Diversity and Student Ra



________ Blacks
.... Whites

g 4 College Prep Prob by Diversity, Region, & Student Ra



________ Blacks, South
- - - - Blacks, Non-South
-   -   - Whites, South
.... Whites, Non-South