Explaining Race Differences in Student Behavior and Academic Achievement: The Relative Contribution of Student, Peer, and School Characteristics

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Introduction

One of the driving forces behind school reform policies is the persistence of inequalities in the educational achievement of public school students. The No Child Left Behind Act of 2001 at its inception acknowledged "a growing 'achievement gap' between white and African American students…left unaddressed for far too long" (U.S. Department of Education, 2006). Nationally, the trend toward narrowing of differences in academic performance has been fairly steady over the past twenty years, with gradual convergence in test scores at all ages and across all subjects. Evidence from school accountability systems, as well as from national surveys, indicates that racial disparities are still sizeable; researchers have estimated that it may take between 30 and 50 years to close the gap in reading achievement and between 75 and 100 years to close the gap in math and science achievement (Hedges & Nowell, 1998).

The achievement gap in North Carolina has followed national trends in long-term convergence, with school accountability reports indicating a decrease in the gap between black and white students scoring at or above grade level. Figure 1 shows an overall gradual trend toward convergence, as well as a substantial gap across all time points. Analyses using average test scores rather than grade level rates confirm this persistence of black-white differences over time in North Carolina (Thompson & O'Quinn, 2001; Clotfelter, Ladd, & Vigdor, 2006).

[Figure 1]

The racial gap in achievement has been documented and researched extensively, given the salience of unequal educational outcomes to employment opportunities and economic well-being over the life course, and as a mechanism for overcoming or perpetuating societal inequalities (Roscigno, 1998). In contrast, very little attention has focused on racial disparities in behavioral outcomes, despite strong evidence that problem behavior in school has adverse effects on academic achievement (Maguin & Lowber, 1996; South & Messner, 2000). School behavior also can have significant implications for delinquent and criminal behavior, as well as other troublesome outcomes in adulthood (Bowditch, 1993; Moffitt & Caspi, 2001; Sampson & Laub, 1992) Prior research shows

that the incidence of problem behaviors in school, reported as disciplinary infractions and suspensions, varies significantly by race (Bryant, et al. 2003; Cook, et al. 2005; Joseph, 1996; Muschkin, Glennie, and Beck, 2006).

This study will contribute to the literature on racial disparities in education by addressing dual outcomes—the academic achievement gap, and disparities in rates of disciplinary infractions in school. We seek to integrate our study of separate dimensions of the school experience, by linking the processes that lead to race disparities in both types of educational outcomes. This integration is possible through our use of administrative data on students in North Carolina public schools, which contain both academic and disciplinary records. In prior studies, analyses of race differences often are hampered by the need to use surveys of educational outcomes that provides elf-reports of behavior and limited sample size. With access to data on all students in all schools within the state, we are able to explore a wide range of variation in individual and contextual influences on the behavior and academic achievement of black and white students.

Explanations of Racial Disparities

Multiple disciplines have weighed in with explanations of racial disparities in educational outcomes—our review encompasses only research that focus on the effects of social structure as manifested in student, school, and peer characteristics and processes. The literature on race disparities covers a number specific outcomes, including gaps in school readiness (Duncan & Magnuson, 2005), development of race differences among cohorts of students over time (Bali & Alvarez, 2004; Clotfelter, Ladd & Vigdor, 2006; Fryer & Levitt, 2004, 2005), differences in processes influencing achievement within and across grade levels in a single school year (Orr, 2003; Roscigno, 1998), and variations in the achievement gap over time and place (Card & Rothstein, 2006; Cook & Evans, 2000). We draw from this rich body of research to inform our analyses of race disparities in problem behavior at school, since there has been little attention focused specifically on this issue.

The existing body of research on race disparities in education offer several types of explanations. The first emphasizes differences between black and white students in

family background characteristics, and considers variation by demographic factors such as age and neighborhood location. The second emphasizes differences in the characteristics of the schools that black and white students attend, as well as heterogeneity in the experiences of black and white students attending the same schools. This strand of research also addresses district-level factors that may shape school experience differently across groups. A less frequently considered influence on the educational gap is the background, behavior, and achievement level of school peers. Peer explanations are, to a certain extent, at the intersection of the individual and school influences on behaviors that differ by race. For the most part, peer factors are not given separate consideration in research because information is lacking in many of the data sources that are suitable for evaluating group differences in educational outcomes.

The majority of research studies on race gaps simultaneously address more than one set of the explanatory factors mentioned above and described below. Analyses that model the processes influencing educational outcomes usually share the goal of identifying the relative contribution of predictors representing each type of factor. These analyses, typically in a regression framework, conceptualize a race gap in terms of the effects of race on educational outcomes, net of the influence of sets of predictors. These studies concur that at least some of the processes represented in these models differ systematically by race, such that the gap in outcomes can be explained not only by the distribution of individual and contextual characteristics, but also by differences in the impact of these characteristics. It is the goal of our study to build upon the analyses that simultaneously consider the influence of student, school, and peer attributes and to assess their relative importance. Our focus is on evaluating a) the extent to which race gaps are attributable to group differences in the distribution of attributes, and b) the extent to which the explanatory factors influence black and white students differently. In our analyses, we will disentangle not only the relative contribution of explanatory factors, but also the proportion of the race gap that is linked to the composition of race groups and the proportion that reflects unequal risk of misbehavior or poor academic performance.

Student Characteristics

The impact of social and economic resources

One of the perplexing issues in research on racial inequalities is the confounding of the relationship of race and socioeconomic factors on individual outcomes. Comparing students at a given time, a significant portion of the lower achievement of black students can be attributed to black-white differences in family socioeconomic resources, including family income, wealth, and parental education (Duncan & Magnuson, 2005; Hedges and Nowell, 1999; Orr, 2003; Hallinan, 2001). There is less conclusive evidence regarding the influence of family resources on trends in the achievement gap over time (Cook & Evans, 2000). Research indicates that there are significant influences of family factors on evolution of racial disparities among students as they advance through school grades (Clotfelter et. al, 2006; Fryer & Levitt, 2005; Phillips, Crouse, & Ralph, 1998).

Most research on delinquent behavior supports the primacy and consistency of its association with socioeconomic attributes (Hawkins et. al, 2000; Gerard and Buehler, 2004; Hawkins, Catalano & Miller, 1992). Prior studies indicate that family socioeconomic resources have consistent influence on the likelihood of committing infractions or being suspended from school (Muschkin, Glennie & Beck, 2006; Cook, MacCoun, Muschkin, & Vigdor, 2005). Research efforts to evaluate the discrete contribution of family socioeconomic resources acknowledge that these factors are interrelated with race to an extent that leaves open the question of whether race in fact is a proxy for income or resources (Blum et al., 2000; National Research Council, 2001). Most recent studies of the achievement gap explicitly model these inter-related predictors; in our study, we specifically address the question of how much of the difference is attributable to the distribution of socioeconomic resources across both groups.

Age/Grade Level

Longitudinal studies of achievement have made a significant contribution to understanding how race differences may vary across the years that a person attends school. Research indicates that Black-White achievement gaps appear in the early grades, and tends to increase through high school. Research finding differ regarding the inception of the race gap, in kindergarten or in the early grades, and also vary regarding

the evolution of the race gap across grades in school (Bali & Alvarez, 2004; Clotfelter et al., 2006, Fryer and Levitt, 2005). Studies that examine variations over time across the distribution of test scores concur that the race gap narrows among low-performing students, and remain constant or increase among students at the top of the distribution (Clotfelter et al., 2006; Hedges and Nowell, 1999).

Unlike these studies, we will examine grade level race differences as a snapshot, at a single point in time, for the purpose of determining whether there is variation in the composition of differences. A cross-sectional view allows us to compare cohorts of students with a shared experience of testing and accountability policies, which have varied considerably over time. A comparison of students across grade levels is particularly salient for our analyses of behavior differences, since the nature and frequency of disciplinary infractions are quite different for elementary, middle, and high school students.

Grade Retention and Old for Grade status

Grade retention has been an issue of considerable debate during the era of high-stakes testing. Research evidence of the negative effects of retention on students on students' subsequent academic outcomes has led to a reduction over time in the proportion of students who are retained in grade, both nationally and in North Carolina. A limited number of studies examine the effects of grade retention on both academic performance and behavior (Byrd & Weitzmann, 1994; Nagin et al., 2003; Pagani et al, 2001). The negative impact of grade retention on disciplinary infractions in schools also varies by race (Muschkin, Glennie, and Beck, 2006), as does the influence of a student being old for grade. Many retained students are old for grade, but we found in our prior study of middle schoolers that old for grade status has independent effects on behavior, associated with older students having greater access to opportunities for misbehaving and being developmentally more inclined to do so. Our findings from this study as well as those of Clotfelter et al. (2006) suggest that a differential distribution of retained and older students may be an important compositional difference between black and white students' behavior outcomes, as well as the academic achievement gap.

School characteristics

Beginning with the Coleman Report in 1966, a strong body of research evolved to investigate the impact of institutional factors that distribute educational opportunity differently across schools. One strand of research conceptualizes the achievement gap as a function of school quality, measured along the dimensions of community SES, school test score performance indices, school resources, and teacher quality (Bali & Alvarez, 2004; Currie & Thomas, 2000; Hanushek, Kain, & Rivkin, 2005; Roscigno, 1998). There is conflicting evidence on the relative importance of school quality as an explanation of race differences in achievement, in part because of differences in its definition, and due to disagreement regarding the extent to which the distributions of these factors are linked to the racial distribution of students across schools. With regard to behavior outcomes, school resources have been linked to behaviors that often vary by race, including student adjustment and disciplinary problems in schools (Blum et al., 2000; Joseph, 1996; Muschkin, Glennie & Beck, 2005).

In our study, we focus precisely on determining the compositional differences in a set of school characteristics, and elucidating the extent to which school characteristics may have differing returns for black and white students. We expect that school differences will be particularly strong in affecting behavior outcomes, since decisions on discipline enforcement and reporting are often made at the school level.

Intersection of student and school factors: the influence of peers

In contrast to the other explanatory factors, peer influence has been examined more closely in its association with behavior than with academic performance. Peer influence is considered in our study to be a link between the characteristics of schools and individual behavior and academic performance. In our study, we refer to grade peers as all the students who attend the same grade within a school. This definition places peers in the social context of a student's school experience, defining a "structure of opportunities" for students to interact with others whose influence may increase the risk of negative behavior or academic failure. The negative influence of peers on behavior has been conceptualized as part of the school climate (Hallinan, 2001), a contagion effect

whereby a student's exposure to deviant peers can lead to development of negative behaviors (Dishion, Dodge & Lansford, 2005). Students who are already at risk of adverse behaviors and academic failure, such as retained and old for grade students, tend to be more vulnerable to the influence of peers (Dishion et al., 2006; Muschkin, Glennie & Beck, 2006).

Peers have been shown to influence the academic aspirations and achievement of students across grade levels, through differential support of academic success among black and white students (Cook and Ludwig, 1997; Mickelson, 1990; Roscigno, 1998; Zirkel, 2004). Other studies have included measures of school and grade racial composition as a strong influence on individual academic achievement. These studies suggest that the racial composition of school peers has independent effects on achievement, that can be distinguished from those of other aspects of school quality (Bali and Alvarez, 2004; Hanushek, Kain & Rivkin, 2002).

Conceptual Framework

In summary, in this study we will examine the processes that influence the academic achievement and the propensity to commit disciplinary infractions among of black and white students. Drawing from the literature on racial disparities in education, we will examine the influence of student, school, and peer characteristics on test scores and infraction rates for students attending public school in North Carolina in the 2000-2001 school year. Our hypotheses focus on variations by race in the effects of each set of explanatory factors, as well as on the extent to which differences are due to distributions and to effects of these characteristics. We emphasize the linkages between the academic and behavioral outcomes, and propose that many of the explanations of the achievement gap also contribute to understanding differences in student behavior in school.

H1 Socioeconomic factors contribute significantly to racial disparities in achievement and behavior, through differences in the distribution of these characteristics across race groups.

H2 Retained and old for grade students are more likely to commit infractions and to have poor academic performance. Disproportionality in the distribution of retained and old for grade students contributes to the black-white gap in achievement and test scores.

H3 Schools with higher resource levels promote better behavior and achievement among all students. The distribution of students across schools with different resource levels contributes significantly to explaining race differences in education outcomes.

H4 The presence of peers who engage in negative behavior exerts an adverse influence on the behavior and the achievement of other students in their grade. Race differences in the proportions of students who commit infractions are a significant component of the behavior and achievement gaps.

H4a. The relative contribution of explanatory factors varies by the proportion of peers who commit infractions. In schools with more discipline problems, the processes that influence behavior and performance will lead to larger race gaps.

H5 Students in schools with high proportions of students who were retained and who are old for grade will have a higher likelihood of engaging in negative behaviors. We propose a retained and old for grade peer effect that is independent of the influence of misbehaving peers, since these students may contribute to creating a disorderly school climate that is not necessarily reflected in disciplinary reports.

H6 The average academic achievement level of peers exerts a positive influence on individual behavior and achievement. The race gap in schools with low achievement levels has stronger compositional component than in schools with high peer achievement.

H7 The effects of the distribution of each of the characteristics noted in H1-H6 with respect to race gaps will vary across grade levels, with stronger family background effects at lower grades, and stronger school and peer effects at higher grades. We expect

that distributional differences will explain a larger proportion of the gap in early grades, and differential risk will be more salient at higher grade levels.

Method

Data

Data come from the North Carolina Education Research Data Center at Duke University and contain data on every student in grades 3-12 in public schools, from 1996-97 to the present. The North Carolina Department of Public Instruction provides most of this information. Outcome measures, infractions and suspensions, come from the Offenses-Consequences dataset, which has one record for each incident involving a legally-reportable offense (such as drug use or possession of a weapon) and/or that resulted in a suspension, expulsion, or placement in an alternative learning program. For the outcome variable, *Any Offense* is coded 1 for a child who was written up for any of these offenses.

Other student measures come from the End of Grade test database. Under North Carolina's accountability system, students in grade 3 through 8 are tested in reading and math each year. This dataset includes other information about the students, and even those who are absent or exempt from the test are included in the file. From this file, we used background measures *female* (coded 1 for female), *parental education* (coded 1 for children whose parents have more than high school education), *eligible for free or reduced price lunch* (coded 1 for children who are free-lunch eligible), *prior reading achievement* (continuous measure of their best score on the 6th grade End of Grade reading test) as well as a measure of whether the student was enrolled in the same school the previous year (coded 1 for *returning student*). A larger proportion of black students, as compared to whites, is eligible for free lunch, has parents with high school degrees or less, and is new to the school they attend. Black students also have lower reading achievement scores on average than their white counterparts. On average, black students attend schools that have a higher proportion of retained students, a lower proportion of students whose parents have at least some college, and have a slightly smaller grade size. Further, proportionately more black students attend urban schools.

Two additional statuses of interest are being old for grade and having been retained. By comparing test-takers each year to those in subsequent years, we identified

those who had been retained as those who had taken the same test (e.g., 3rd grade reading) in successive years. Note that because students do not take end of grade tests prior to third grade, this measure only identifies those who were retained in third grade or later. From the student's birth date, we calculated old-for-grade as those whose ages were in the 75th percentile of their class or higher. Approximately 82.88% of our sample is neither old for grade nor retained, while 11.15% of our sample is old (but not retained), 1.2% has been retained (but is not old) and 5.97% is both retained and old. In our final model we isolated *retained* from *old for grade* (but not retained), thus retained includes both normative age and old for grade students. Of black students, 9.87 % have been retained and 12.58% are old for grade, while the corresponding proportions for white students are 3.97 % and 10.42%, respectively.

Measures of school context include *urban school* (coded 1 for city), *7th grade cohort size*, and the percentage of students whose parents have more than high school education (*Grade Level Mean of Parental Education*). Finally, measures of peers include the *proportion of 7th graders who were retained,* the *proportion of 7th graders who were old for grade*, and the *proportion of 7th graders who have committed at least one infraction*. Additional measures of school resources will be included in the academic achievement analyses, including per pupil expenditures, and measures of teacher quality.

Analyses

Separate subgroup regressions will be conducted for disciplinary behavior and end of grade reading and math scores among seventh grade students; appropriate model specification accounting for the nonlinear nature of the disciplinary outcome will be utilized. The Blinder-Oaxaca decomposition technique will be used to quantify racial differences in achievement associated with distribution and with effects of explanatory factors. A nonlinear variant of this technique, proposed by Fairlie (1999), will be used to understand racial differences in disciplinary outcomes. The separate subgroup regressions and decompositions not only will allow us to examine which student, school and peer characteristics lead students to be more likely to commit at least one infraction and lead to higher achievement, but it will also allow us to examine how the distributions of these characteristics contribute to closing or widening the disciplinary and achievement gaps.

For both outcomes, particular attention will be paid to student level socioeconomic characteristics, retained and old for grade status, and peer characteristics. Achievement analyses will also include measures of school resources, including but not limited to financial resources and measures of teacher quality and turnover. In order to address hypotheses 4a and 6, the decompositions will also be conducted on separate subgroups of students who reside in the top and bottom 25th percentile of school level achievement, and peer level disciplinary infractions. Finally, this paper will examine three grade levels in the 2000-2001 academic year, including 4th, 7th and 9th grades.

Preliminary Results

Racial Infraction Patterns

[Table 1 Here]

There are substantial race and gender differences in the proportion of students who commit any infraction. For the total sample, 29.42% of black 7th graders and 13.79% of white 7th graders have committed at least one infraction during the academic year. Retained students are more likely to have committed any infraction than their retained counterparts, as 47.30 % of retained black students, and 40.60 % of retained white students, while 27.46 % of nonretained blacks, and 12.68 % of nonretained whites have committed any infraction during the year. Both black and white students with high parental education, high achievement, and nonpoor (not eligible for free/reduced price lunch) commit infractions in lower proportions than peers without these characteristics. However, black students with both advantageous characteristics, such as high parental education and high achievement, and disadvantageous characteristics, such as free/reduced price lunch eligible and low achievement, commit at least one infraction in higher proportions than their white peers with the same characteristics.

Racial Achievement Patterns

Average end of grade math and reading scores are also presented by race in Table 1. Similar to patterns of committing any infraction, black students have on average lower achievement in both math and reading regardless of individual characteristics. In some cases, white students with a disadvantageous characteristic have higher scores than black students with the more advantageous characteristic. For example, white students whose

parents have low levels of education, have slightly higher average scores than black students whose parents have high levels of education. The same is true for old for grade status, with white OFG students having higher average scores than black students who are normative age. In general, the racial differences in test scores are larger for the math exam than the reading exam. Some of the smallest racial gaps in scores are among retained students and students eligible for free/reduced price lunch, suggesting perhaps a homogenizing effect of retention and poverty.

Racial Differences in Committing An Infraction

We estimate a series of race and gender specific logit models. In our model, $Y_{ij} = \beta_0 + \beta X_i + \beta Z_j + E_{ij}$, the outcome variable Y_{ij} represents the behavior of student *i* attending middle school *j*. Y_{ij} is estimated as a negative behavioral outcome—the propensity to commit a reported disciplinary infraction. X_i represents a vector of individual-level student predictors; Z_j represents a vector of school-level predictors, including characteristics of seventh graders in that school; E_{ij} is an error term assumed to be normally distributed and reflecting unobserved student and school attributes.

[Table 2 Here]

Preliminary results indicate, in support of hypothesis 2, that for both white and black students, retained and old for grade status independently increase the likelihood of committing any infraction. For white students, having been retained increases the likelihood of an infraction by 202.7 %, while being old for grade increases the likelihood by 36.6%; the increases for black students are 130.5 % and 35.1 %, respectively. In support of hypothesis 4, the likelihood of committing any infraction increases as the proportion of fellow 7th graders who have committed at least one infraction over the course of the year increases. In Model 2 and Model 4, the final models for white and black students, each percentage increase in peers who have committed at least one infraction during the course of the year increases the likelihood that a student will commit an infraction by 7.2 % for black students, and 7.7 % for white students.

In the final model for white students (Model 2), whites students who have parents with high level of education are 42.2 % less likely to commit any infraction, while

free/reduced lunch eligibility has an effect in the opposite direction, increasing the likelihood of committing any infraction by 73.2%. White females are 69.2% less likely to commit any infraction than white males, while returning students are 10.3% less likely as compared to transfer students.

Preliminary results for black students (Model 4) indicate that black females are 42.3 % less likely than male students to commit any infraction, while higher parental education decreases the likelihood by 30.2 %. Black students eligible for free/reduced price lunch are 42.8 % more likely, while returning students are 14.7 % less likely to commit any infraction. High achievement has a similar effect for both black students and white, with each ten point increase in the previous year's achievement score decreasing the likelihood of disciplinary problems by 30.5 % for blacks and 34.9 % for whites.

Decomposing the Racial Gap in Committing Any Infraction

Decomposition methods can help determine whether differences in the effects of coefficients or characteristics of students and the schools they attend better explain the black/white difference in the probability of committing any infraction. By incorporating the average values and/or coefficients for whites into the black model, and comparing these results to the white predicted probability, decompositions use a counterfactual approach to determine how much of the total difference can be attributed to characteristics or behavior (DeGraff, 1991). Decomposition methods have been most frequently used to examine racial or gender differences in employment and earnings related factors (Bernhardt et al., 1995; Fairlie, 1999; Kilbourne et al. 1994; Wolf and Fligstein, 1979), but also applied to differences in demographic processes such as marriage, mortality, fertility and contraceptive use (Amato et al. 2003; Carlson, 2006; DeGraffe, 1991; Powers and Pullum, 2006). This method has been less frequently used to examine differences in educational experiences of adolescents, for example gaps in attainment and test scores (Kingdon, 2002; McEwan, 2004). Further, while work within the criminology field has also utilized such methods, differences in disciplinary infractions have not been examined.

The typical method for decomposing differences in rates is the Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). However, for nonlinear dependent

variables this technique is inappropriate (Fairlie 1999, 2005). A small body of literature has utilized decomposition techniques to examine nonlinear outcomes, decomposing differences in the average probability of an outcome (Bartholomae et al., 2004; DeGraffe, 1991).

The decomposition specifies two, and in some studies three, parts: a) the portion of change/difference that is due to differences in endowments; b) the portion due to differences in coefficients; and c) differences in the interaction of the former two. Many researchers choose to interpret only the differences due to endowments as the later two are difficult to distinguish and further may also be capturing unmeasured endowments (See Cain, 1986; Fairlie, 2006; Jackson and Lindey, 1989; and Jones, 1983 for a more thorough discussion). Alternatively, other research presents the latter two as an aggregate measure with the aforementioned caveat.

Additionally, the choice of a group to use for the coefficient weights and endowments, known as the indexing problem, can lead to different results (Fairlie, 2006). An additional specification is to use a weight from a pooled sample, all three will be estimated here for comparative purposes. Fairlie's (1999) method necessitates a one-to-one matched sample of the two groups under study, which in practice can have disparate sample sizes. This method carries out sampling with replacement to estimate mean results.

[Table 3 Here]

Table 3 reports decomposition estimates, in which the black coefficients are used as weights in the specification reported in the first row, white coefficients in the second row, and pooled coefficients in the third row. Using weights from the black sample, 70.5% of the gap in the probability of committing any infraction is explained by compositional factors. Alternatively, 66.0 % and 76.9 % of the total difference would be explained by compositional factors if the white or pooled sample weights were used, respectively.

[Table 4 Here]

The individual compositional factors are presented in Table 4, with columns for results weighted by the black, white and pooled sample, in addition to a column that displays the

proportion of the total compositional effect explained by a particular factor. As anticipated by hypothesis 1, student level socioeconomic factors explain approximately 37 % of the composition effect, or 28% or the total gap in the probability of committing any disciplinary infraction. Parental education explains 9.2 % of the composition effect, while free/reduced price lunch eligibility explains 27.5 % of the compositional effect, confirming that racial differences in socioeconomic status explain a substantial portion of the gap in behavior.

While, in support of hypothesis 2, the disproportionate distribution of retained students accounts for 9.2 % of the composition effect, the distribution of old for grade students explains only 0.8 % of the effect, suggesting that the differential distribution of retained students explains a modest proportion of the racial gap in behavior while the differential distribution of old for grade students explains very little. Academic achievement also explains a substantial portion of the racial gap, with 36.7 % of the compositional effect on race differences is explained by different distributions of achievement in the two groups.

The racial difference in the distribution of disruptive peers also explains a large portion of the racial gap in the probability of committing any infraction as anticipated (hypothesis 4). Approximately 21.6 % of the compositional effect can be explained by differences in the proportion of peers that have committed at least one infraction during the year.

We find little support for hypothesis 3 in regards to student behavior, as school level descriptive measures, such as grade size, urban school, and socioeconomic status of peers serve to reduce the gap between white students and black students, as indicated by the negative estimates. However, we anticipate that these factors may be more important in explaining academic achievement than behavior.

Discussion: the black-white gap in student behavior

Preliminary analyses indicate that socioeconomic factors not only increase the likelihood of committing any infraction for both white and black students, but also explain slightly less than a third of the total difference between black and white students. Not only are retained and old for grade students, both black and white, more likely to

have disciplinary problems in school, but differences in distributions of retained students explain a modest amount of the racial difference in the probability of infracting. Academic achievement is not only a significant predictor at the individual level, substantially reducing the likelihood of committing any infraction, but disproportionate distributions of achievement in the two groups account for approximately a third of the racial gap. The proportion of disruptive peers is positively related to the likelihood of committing any infraction, with each percent increasing the likelihood by about 7 % for both groups. Additionally, this particular compositional effect explains 21.6 % of the total compositional effect, or about 17 % of the total racial difference.

Additional analyses will examine students in schools with extremely high and low levels of peer achievement and disruption for both the disciplinary outcome as well as academic achievement. Academic achievement results will proceed in a similar manner, with separate subgroup regressions and decompositions for both math and reading scores. Finally, additional grades of data will be examined to determine how these patterns may differ in elementary and high school.

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Figure 1. Percent Performing At or Above Grade Level, by Grade, Exam, and Year

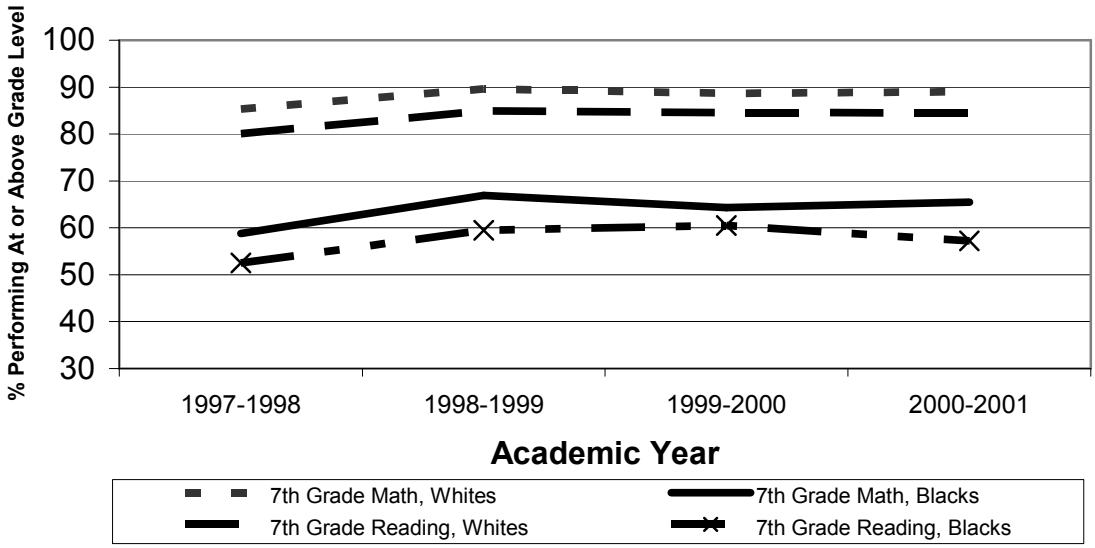

Table 1. Descriptive Statistics for Black and White Students

	% Committing Any Infraction		Average Math/Reading End of Grade Test Score	
	White	Black	White	Black
Total	13.79	29.42	270.3 M 162.4 R	261.4 M 155.7 R
Retained	40.60	47.30	261.1 155.7	257.4 152.2
Not Retained	12.68	27.46	270.7 162.7	261.8 156.1
Old for Grade	23.17	38.20	263.9 157.6	256.3 151.0
Normative Aged	12.70	28.16	271.0 162.9	262.0 156.3
Parent has a H.S. degree or less	20.15	32.98	265.9 159.3	259.7 154.2
Parent has at least some college	8.72	22.44	273.6 164.9	264.3 158.5
Achievement Above/At Grade Level	10.50	22.24		
Achievement Below Grade Level	25.78	36.45		
Eligible for Free/ Reduced Price Lunch	25.00	32.89	264.6 158.3	260.0 154.4
Not Eligible for Free/ Reduced Price Lunch	11.15	23.24	271.5 163.4	263.7 158.1

Table 2. Predicting Any Infraction, Logit Analyses by Race

	White Students		Black Students	
Covariates	Model 1	Model 2	Model 3	Model 4
Individual Level				
Female	-1.089***	-1.178***	-0.495***	-0.550***
	(0.031)	(0.032)	(0.030)	(0.032)
Parent has at least some college	-0.426***	-0.548***	-0.261***	-0.359***
	(0.033)	(0.034)	(0.035)	(0.037)
Eligible for Free/Reduced Price Lunch	0.594***	0.549***	0.435***	0.356***
	(0.034)	(0.036)	(0.036)	(0.038)
Returning Student	-0.117**	-0.109*	-0.157***	-0.159***
	(0.041)	(0.043)	(0.036)	(0.039)
Retained Student	0.895***	1.107***	0.615***	0.835***
	(0.054)	(0.057)	(0.047)	(0.051)
Old for Grade Student	0.235***	0.312***	0.202***	0.301***
	(0.041)	(0.043)	(0.044)	(0.047)
Reading Achievement Score in 6th Grade	-0.387***	-0.430***	-0.315***	-0.364***
	(0.018)	(0.019)	(0.020)	(0.021)
School/Grade-Level				
% of 7th Graders who have committed		0.074***		0.069***
at least one infraction		(0.001)		(0.001)
% of 7th Graders who are OFG	0.035***	-0.001	0.056***	0.013***
	(0.003)	(0.003)	(0.003)	(0.003)
% of 7th Graders who were Retained	0.039***	-0.013***	0.036***	-0.010***
	(0.002)	(0.003)	(0.002)	(0.003)
7th Grade Cohort Size	0.001***	0.0003	0.002***	0.001***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Urban School	-0.080*	-0.169***	-0.093**	-0.146***
	(0.038)	(0.039)	(0.031)	(0.034)
% with Parental Education > HS	-0.005***	0.010***	0.0001	0.016***
	(0.001)	(0.002)	(0.001)	(0.001)
Intercept	3.698***	3.548***	2.231***	2.224***
	(0.286)	(0.300)	(0.309)	(0.331)
Sample Size	47851	47851	24616	24616
R^2	0.137	0.209	0.078	0.178

Table 3. Difference in Committing Any Infraction Due to Composition Versus Infraction Risks

	Comp.	Rates	Total
Based on Black Sample	0.110	0.046	0.156
	70.5%	29.5%	100%
Based on White Sample	0.103	0.053	0.156
	66.0%	34.0%	100%
Based on Pooled Sample	0.120	0.036	0.156
	76.9%	23.1%	100%

Table 4. Contribution of Composition to Black/White Difference in Committing Any Infraction

Sample	Black	White	Pooled	%*
Individual Level				
Female	0.004	0.013	0.008	6.7
Parent has at least some college	0.010	0.010	0.011	9.2
Eligible for Free/Reduced Price Lunch	0.024	0.028	0.033	27.5
Returning Student	0.002	0.001	0.001	0.8
Retained Student	0.010	0.012	0.011	9.2
Old for Grade Student	0.002	0.001	0.001	0.8
Reading Achievement Score in 6th Grade	0.041	0.037	0.044	36.7
School/Grade-Level				
% who have committed >=1 infraction	0.031	0.023	0.026	21.6
% of 7th Graders who are OFG	0.0005	-0.00003a	0.0002	0.2
% of 7th Graders who were Retained	-0.005	-0.005	-0.003	-2.5
7th Grade Cohort Size	-0.002	-0.001a	-0.001	-0.8
Urban School	-0.003	-0.003	-0.002	-1.7
% with Parental Education > HS	-0.009	-0.004	-0.006	-5.0

*As a proportion of total explained, pooled sample. Does not sum to 100 as controls for missings are not shown.

a Indicates a nonsignificant z-statistic.