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Race, Gender, School Discipline, and Human Capital Effects

Jeffrey L. Jordan and Bulent Anil

Noncognitive factors such as discipline (and its mirror, punishment in the form of discipline referrals) can affect school and labor market outcomes, human capital development, and thus the economic well-being of communities. It is well-known throughout the United States, but particularly in rural areas of the south that black males drop out of school more frequently than white males, face higher levels of unemployment, and are incarcerated at a disproportionate rate compared with their white cohorts. Also students in low-income homes were three times more likely to drop out than those from average-income homes and nine times more likely than students from high-income homes. This paper tests the hypothesis that the odds of a student being referred for disciplinary action in the middle school setting (8th grade) increases if the student is male, black, in special education classes, or is poor. We conclude that is indeed the case, with the exception of students assigned to special education classes. In particular, we find that low income students are up to eight times more likely to be sent for disciplinary referrals than others. We next tested the hypothesis that the gender and race of the teachers who refer students for disciplinary action have a significant impact on the first hypothesis. Here the evidence that there is a “color to discipline” in this school district is weak.

Key Words: discipline, school drop outs, student/teacher race and gender

JEL Classifications: I20, J24

It is so well-known that it is a cliché: to get a good job, you need a good education. Like the fact that smoking causes cancer, everyone knows that remaining in school at least through high school graduation is vital to staying out of low-wage America. Rural economic development depends on the human capital generated through an educated work force. Heckman and

LaFontaine (2008) note that the internal rate of return to graduating from high school versus dropping out is now above 50%. Yet, just like people continue to smoke, kids drop out of school. In studies conducted since the 1970s scholars have isolated dozens of predictors for students who are likely to drop out. According to researchers, no one factor causes students to suddenly drop out. The process is long and cumulative. Test scores and poor grades, while important, are not the only determination of drop outs. Common in this area of research is the issue of discipline. Many discipline referrals incurred by a child has been found to be a good predictor of the child's decision to drop out of school and of lower average lifetime earnings (Neild, Balfanz, and Herzog, 2007; Segal, 2006; Viadero, 2006).

Jeffrey L. Jordan is professor, Department of Agricultural and Applied Economics, University of Georgia, Griffin, GA. Bulent Anil is assistant professor, Department of Economics, University of Minnesota-Duluth, Duluth, MN.

This paper was presented at the Organized Symposium, “Human Capital and Rural Economic Development” at the 2009 Annual Meeting of the Southern Agricultural Economics Association.

The literature is extensive in the area of school discipline and in the existence of racial, gender, and socioeconomic factors that affect school discipline referrals. Consistently, researchers have found that minorities are disproportionately represented in the administration of school discipline (for example, McCarthy and Hoge, 1987; McFadden and Marsh, 1992; Raffaele Mendez and Knoff, 2003; Skiba, Peterson, and Williams, 1997; Skiba et al., 2002; Thornton and Trent, 1988; Wooldridge and Richman, 1985; Wu et al., 1982). In addition, there is a substantial literature on the connection between the race of teachers and student performance, most notably regarding grades and test scores (for example, Bahr and Fuchs, 1991; Beady and Hansell, 1981; Dee, 2005; Ferguson, 1998; Goebes and Shore, 1975; Hinojosa, 2008; Prieto and Zucker, 1981; Sheets, 1996; Taylor, Gunter, and Slate, 2001).

In this paper we test first the hypothesis that the odds of a student being referred for disciplinary action increase if the student is male, black, in special education classes, or is poor. We next test the hypothesis that the gender and race of the teachers who refer students for disciplinary action have a significant impact on the first hypothesis.

Our research was conducted with eighth grade students at the four middle schools in a rural/suburban school district in Georgia. We chose this grade because, nationally, 35% of students who drop-out of school do so between the 9th and 10th grades (when they turn 16 most states allow a student to leave school). Thus, it is in that transition from middle to high school (beginning in eighth grade) that students are making educational choices.

We examine observations of disciplinary actions taken against eighth grade students in the school years between 2006 and 2008. Disciplinary actions are over-dispersed count data with 61% of the students with either zero or one referral. Thus we use an ordered logit model to estimate the odds of a student having higher numbers of discipline referrals. We include the characteristics of gender, race, instructional setting (regular education, gifted classes, special education, remedial classes), absences, standardized test scores for reading and math,

and whether students are on free or reduced lunch (a standard school measure of income).

To further examine the gender and race issues highlighted by the logistic model, we present school system data on the race and gender of the teacher/student discipline referral pairings. School system data indicates an over-representation in discipline referrals of African-American students. We will further explore this effect by taking into account the race and gender of the teachers who refer students to the office for discipline.

Our research is motivated by the well-known educational gap between blacks and whites. According to the 2000 Georgia population census, only 14% of black men and 20% of black women between the ages of 25 and 35 have college degrees. This is in comparison with 32% for white men and 36% for white women in the same age group. In addition, a growing black-white education gap is apparent. While white women and men increased their percent of college educated by 11 points since 2000, black women did so by only six points and black men by four points. Nationally, Heckman and LaFontaine (2008) estimate that U.S. schools graduate about 76% of its students but only 64% of black and Hispanic students.

Background

The causal mechanisms that link children to adult outcomes and to the development of human capital are not clear. The links can include shared genetic factors, shared socioeconomic family environments, or shared community environments (Kaestner, 2008). These latter factors most certainly include the quality and quantity of a child's education. While human capital research has often included cognitive and family background factors in the analysis, the influence of noncognitive factors on socioeconomic outcomes, and thus on community development, has recently become an important area of research (Cunha and Heckman, 2007). In addition, different forms of human capital are complementary—investments in a noncognitive factor such as self-control or discipline can cause investments in other forms of human capital that lead to improved adult

outcomes (Kaestner, 2008). Most human capital studies focus on the cognitive development that occurs due to time spent in school. Several authors have pointed out that noncognitive factors can affect school and labor market outcomes (Bowles, Gintis, and Osborne, 2001; Heckman, Stixrud, and Urzua, 2006; Segal, 2006). Cunha and Heckman (2007) note that, “child development is not just about cognitive skill formation, although a lot of public policy analysis focuses solely on cognitive test scores” (p. 42). The noncognitive skill of interest in this paper is the ability of children to learn to avoid the incidents of disciplinary referrals in the school setting. The mirror of this is the impact that repeated disciplinary referrals have on students, particularly on their long-term success at staying in school to graduation. This issue is especially critical when discipline is disproportionately applied across race, gender, and income.

Dropping out of school often follows “a long history of suspensions, expulsions, detentions, demerits, and other disciplinary actions on the part of the public schools” (Taylor and Foster, 1986, p. 500). Most human capital literature points to high school graduation as an important measure in connecting schooling to economic development. For this school system under study in this paper, 592 students dropped out of school between 2003 and 2008. When they were in eighth grade, their disciplinary referrals averaged nearly five (Standard Deviation 4.96). Taylor and Foster (1986) add that “when the policy of school suspensions is applied unevenly to a racial, sexual, or ethnic group, that group’s collective opportunity for advancement is threatened” (p. 500). This disproportionate application of discipline, and thus the ability to increase individual human capital, is a systemic problem in school systems. There is a significant literature on the damaging affect public education policies have on black males. Disproportionate discipline is just one that reduces educational opportunities, and thus human capital formation, and finally economic development.

Economic literature on policy issues surrounding student achievement has focused primarily on educational resources that reduce

class size and deal with other issues like teacher salaries (Dee, 2004). Economists and those in other disciplines have also sought to examine the impact of family characteristics that may affect student performance such as income, parental education, and the number of books in a home. Yet, as Dee (2004) notes, few studies have examined the relationship between exposure to own-race teachers and subsequent levels of student achievement, including the incidents of disciplinary referrals. Pigott and Cowen (2000) found that while both African-American and white teachers judged African-American children to have more school adjustment problems, no significant teacher race/student race interaction was found. Ehrenberg, Goldhaber, and Brewer (1995), using data from the national Educational Longitudinal Study of 1988, found that the match between teachers’ race, gender, and ethnicity and those of their students had little association with student achievement. However, Dee (2004), in a randomized experiment in Tennessee, did find a limited and qualified link between own-race teachers and student achievement.

Data

The measure of discipline used in this study is based on the number of disciplinary referrals from four middle schools during the 8th grade year for the years 2006–2008. A disciplinary referral happens when a student is sent to the administrative office (by a teacher, administrator, or other adult such as a bus driver) and the behavior is entered into the student’s data file (resulting in reprimand, detention, suspension, etc.). This does not include referrals to the office that do not result in a recorded entry in the student’s data file. For this study only teacher referrals are included in the analysis. We constructed a pooled cross-section data set by using the discipline referrals of the four middle schools.

Table 1 shows that girls are disciplined proportionately less than boys (zero incidents category) and boys have a higher proportion of large numbers of referrals (six or over). The same pattern is seen in terms of race where whites are over-represented in the lower

Table 1. All Middle Schools, Eighth Grade Students 2006–2008

	% of Category of Discipline Referrals				Total
	0	1	2–5	6+	
Girls make up 49% of the population	57	49	45	33	43
Boys make up 51% of the population	43	51	55	67	57
Whites make up 47% of the population	54	48	42	31	40
Blacks make up 47% of the population	37	48	53	65	55
Black boys make up 23% of the pop	16	22	29	39	30
Black girls make up 23% of the pop	21	26	24	26	25
White boys make up 24% of the pop	24	28	23	24	25
White girls make up 22% of the pop	30	20	18	7	16
Child on F/R lunch make up 67% of pop	58	67	73	89	76
Child not on F/R lunch make up 33%	42	33	27	11	24
Absent 0 or 1 time make up 26% of pop	38	23	16	6	15
Absent 2–5 times make up 28% of pop	29	36	30	16	27
Absent 6–9 times make up 24% of pop	23	19	26	25	25
Absent 10+ times make up 22% of pop	10	21	28	52	33
Math poor make up 43% of pop	33	26	57	65	51
Reading poor make up 13% of pop	8	12	16	25	17
Gifted makes 7% of pop	11	6	3	1	3
Special education makes 13% of pop	10	12	16	19	16
Regular education makes 80% of pop	79	82	81	80	81

Pop = Population; F/R = free or reduced.

categories of discipline and under-represented in higher categories while the opposite is true for blacks. When we look at the proportion of incidents by both race and gender, black girls and white boys are represented proportionally throughout all categories of discipline referrals. Black boys however are disproportionately under represented in the 0 category and over represented in higher categories other than one referral. White girls, on the other hand, are over represented at the lower end of referrals and under represented in the higher categories of discipline referrals. Similarly, children from economically disadvantaged backgrounds (measured by those qualifying for free or reduced lunches) are less than proportionately represented in the zero incidents category and over represented in the higher discipline referral categories.

Table 2 provides student summary information. The mean disciplinary referrals for students was two per year for all students, but was five per year when those students with zero

referrals were excluded. Math poor and reading poor refers to the percentage of students who scored at level 1 (did not meet basic requirements) on the state standardized test taken in the spring of seventh grade. Only 33% of those students with zero disciplinary referrals scored level one in math compared with 51% with at least one referral. The same pattern holds for reading scores. Students with zero disciplinary referrals, as compared with those with at least one referral, are proportionally whiter, female, less chronically absent, score better on standardized tests, are more gifted, and are less poor.

In addition to accounting for the race and gender of the students who are being disciplined, we note the race and gender of the teachers who send children to the office. Table 3 shows the percentage breakdown of teachers in this school system. In addition, Table 3 shows the percentage of teachers who had no discipline referrals and those who sent at least one student to the office. Male teachers, both black and white, are less likely to have not sent

Table 2. Descriptive Statistics of Sample

Variable	Mean (%)		
	All	0 Referrals	1+Referrals
White	47	54	40
Black	46	37	55
Other race	7	9	5
Female	49	57	43
Male	51	43	57
Absent 0–1 times	26	38	15
Absent 2–5 times	28	29	27
Absent 6–9 times	24	23	25
Absent over 10 times	22	10	33
Discipline referrals	2	0	5
Math poor (CRCT level 1)	43	33	51
Reading poor (CRCT level 1)	13	8	17
Gifted	7	11	3
Special education	13	10	16
Regular education	80	79	81
Free/reduced meal	67	58	76
Paid meal	33	42	24
Reduced meal	9	10	8
Free meal	58	48	68

CRCT = Criterion Referenced Competency Test.

students for discipline action and more likely to have referrals. Across just race, white and black teachers are represented proportionally. Table 4 shows discipline referrals by gender and race over the 2006–2008 study period. Given the make-up of the teachers in this district, it is no surprise that white and female teachers send the most kids to the office. However, on a per teacher basis, black teachers and male teachers send kids to the office at nearly double the rate. Particularly notable is the referrals per teacher for black males (32).

Model

An education production function maps the quantities of inputs of school and student characteristics to some measure of school output, usually student test scores. There is no single specific education production function. Researchers have different ideas of what are relevant inputs and outputs of such a function. Some include variables representing a students’

home environment, others do not. Uncertainty also exists in the literature regarding the proper functional form, level of aggregation, and relevant control variables in an education production function (Krueger, 1999). Education researchers usually use test scores as the dependent variable while economics look at educational attainment and subsequent earnings of individuals. A general linear regression normally takes the form:

$$Y = X'b + S'c + \epsilon$$

Where Y is a measure of school outputs such as a vector of student test scores, X is a set of student attributes, S is a vector of measures of schools attended by the students, b and c are coefficients, and ε is the stochastic error component.

In this paper we estimate an ordered logit regression using the following model:

$$Y_i = \beta_0 + \beta_1 RGE_i + \beta_2 INSTRUCTIONAL SETTING_i + \beta_3 INCOME_i + \beta_4 ABSENCES_i + \beta_5 X_i + \theta_s + \epsilon_{is}$$

where Y_i is the arbitrary category for disciplinary referrals for student i . Y_i takes the values one, two, and three if student i has one to five, six to nine, or 10 and more disciplinary referrals, respectively. In ordered logit regression, we did not include the students with zero disciplinary referrals since there is not a corresponding teacher who sends these students for referrals. RGE_i is a vector of dummies indicating students’ race, gender, and ethnicity; $INSTRUCTIONAL SETTING_i$ is a vector of observed teaching settings (regular education, gifted, special education); $INCOME_i$ is a dummy indicating whether student i participates in the free and reduced lunch program; $ABSENCES_i$ is a vector of dummy variables of observed number of absences for student i grouped in categories of low (one to five absences), medium (six to nine absences), and extreme (10 and up) number of absences with respect to 0 absences; X_i is a vector of observed teacher/student interaction terms; and θ_s is a separate dummy variable included for each of the four schools to absorb the school effects. These school effects control to some degree location effects

Table 3. Teacher Referrals

Category	Teachers %	Teachers 0 Referrals %	Teachers 1+ Referrals %
White	66	62	66
Black	34	37	34
Male	29	14	34
Female	71	86	66
Black female	25	30	23
Black male	10	6	11
White female	47	54	43
White male	19	8	23

that are not otherwise captured in the data. Thus, the effects we find in the other variables are less affected by location so we expect less influence from unobservable characteristics. The coefficients produced by the ordered logit regression give the odds that the covariate would move a student into higher categories of discipline referrals. A significant coefficient above one means that a student with that characteristic would more likely have a higher number of discipline referrals (with respect to zero) and a significant coefficient below one means that the student is less likely to have higher number of discipline referrals due to that covariate, controlling for all other factors.

For the student/teacher interaction terms, we tested the effect of various race/gender interactions, and their effects on the other variables. For each disciplinary referral our data shows the teacher who referred the student to the office.

Results

We first ran an ordinary least squares (OLS) regression with the number of discipline

referrals as the dependent variable in order to compare both OLS and ordered logit regression in terms of demographic outcomes (no teacher interactions). Table 5 shows that white and other race (primarily Hispanic) students have significantly fewer disciplinary referrals than black students, females less than males, gifted students less than all others, students absent only a few times less than others, and those on free and reduced lunches and the extremely absent more than others. These results confirm that proportionally African-Americans, boys, and economically disadvantaged students face more disciplinary referrals than other students.

Examining the results of the ordered logit model (Table 6) column one shows the ordered logit results before we add interaction terms. We find that being black means the odds of having a higher number of discipline referrals than whites is nearly one and a half times as high compared with white students. If the student is of another race (in this case mostly Hispanic) they have a 46% less chance of having a higher number of referrals as compared with white students. Females and gifted students are also less likely to have a higher number of referrals than males or other students (by 54% and 66%, respectively). Those economically disadvantaged students are more than two and a half times as likely as students not on a free or reduced lunch to have higher disciplinary referrals. As expected, lower levels of absences are associated with lower levels of discipline. However those students with more than 10 absences are more than twice as likely to have higher levels of discipline referrals.

Table 4. Discipline Referrals by Teacher and Gender (n = 3,764 referrals)

Category	Number	Frequency	% of Referrals	Referral/Teacher
White	145	2,015	53	14
Black	76	1,749	47	23
Male	63	1,486	39	24
Female	158	2,278	61	14
Black female	55	1,068	28	19
Black male	21	681	18	32
White female	103	1,210	32	12
White male	42	805	21	19

Table 5. OLS Results (n = 1,964 students)

<i>Dependent Variable = Number of Referrals</i>		
Category	Coefficient	Std. Error
White	-1.102***	0.183
Other race	-1.612***	0.334
Female	-1.276***	0.163
Gifted	-0.882***	0.331
Special education	0.277	0.245
Free/Reduced lunch	1.059***	0.192
Absent 1–5 times	-0.400*	0.229
Absent 6–9 times	0.371	0.245
Absent 10 times or more	2.870***	0.255

*** denotes significance at 1% level. * denotes significance at 5% level.

This is the case since high levels of absences are correlated with the number of days out of school due to suspensions. With respect to School 4, students in Schools 1 and 3 are less

likely to be referred to the office (by 35% and 29% respectively) but students in School 2 are nearly twice as likely to face disciplinary referrals. When we isolate just the gender of the teacher, there is no significant difference of facing discipline from a female teacher as compared with a male. This is in spite of the fact that the majority of teachers are female. This indicates that male teachers send more discipline cases proportionally than do females, as seen in Table 4. Overall, a student is 14% less likely to be sent to the office by a white teacher.

In terms of teacher/student interactions (columns 2–4), the black female teacher variable is significant and above one. A black female teacher is more likely to send a student to the office than a white male (column 2). Black male teachers and white female teachers are not significantly different than white males. When we look at white teacher/black student and female teacher/female student interactions, no

Table 6. Ordered Logit Results (n = 3,820 referrals)

Category	Odds Ratio (standard error)	Odds Ratio (standard error)	Odds Ratio (standard error)	Odds Ratio (standard error)
Black	1.39*** (0.102)	1.39*** (0.103)	1.07 (0.173)	1.26** (0.128)
Other race	0.54*** (0.096)	0.54*** (0.096)	0.53*** (0.095)	0.54*** (0.095)
Female	0.46*** (0.031)	0.46*** (0.031)	0.46*** (0.031)	0.44*** (0.047)
Gifted	0.34*** (0.094)	0.34*** (0.094)	0.35*** (0.095)	0.35*** (0.096)
Special education	0.95 (0.077)	0.95 (0.077)	0.95 (0.077)	0.95 (0.077)
Free/Reduced lunch	2.57*** (0.246)	2.57*** (0.247)	2.59*** (0.248)	2.57*** (0.246)
Absent 1–5 times	0.28*** (0.032)	0.28*** (0.031)	0.28*** (0.031)	0.28*** (0.032)
Absent 6–9 times	0.87 (0.083)	0.86 (0.083)	0.87 (0.084)	0.87 (0.083)
Absent 10 times or more	2.24*** (0.182)	2.23*** (0.181)	2.24*** (0.182)	2.25*** (0.183)
School 1	0.65*** (0.075)	0.64*** (0.074)	0.64*** (0.075)	0.64*** (0.074)
School 2	1.65*** (0.136)	1.61*** (0.136)	1.62*** (0.137)	1.63*** (0.138)
School 3	0.71*** (0.063)	0.71*** (0.063)	0.72*** (0.064)	0.72*** (0.063)
Female teacher	1.02 (0.067)	—	—	—
White teacher	0.86** (0.060)	—	—	—
Black female teacher	—	1.18* (0.114)	1.18* (0.114)	1.63* (0.138)
Black male teacher	—	1.08 (0.109)	0.97 (0.114)	1.28 (0.166)
White female teacher	—	0.95 (0.082)	0.95 (0.083)	1.21 (0.153)
Black male teacher/Black student	—	—	1.37* (0.236)	—
White teacher/Black student	—	—	—	0.92 (0.090)
Female teacher/Female student	—	—	—	1.20 (0.152)

*** denotes significance at 1% level. ** denotes significance at 5% level. * denotes significance at 10% level.

significance is found. However, the interaction black male teacher/black student is significant at the 10% level and above one. Here, (column 3) a black student is 1.4 times more likely to be sent to the office by a black male teacher than all other combinations of the race and gender of both teachers and students. In this regression, black male becomes insignificant due to collinearity with the black male/black student interaction. All other combinations of student and teacher race and gender were tried with no significant results.

To further explore these results, we ran ordered logit regressions for each school individually. Although the control groups are then different as compared with the pooled sample, we get similar results. In three of the four schools, blacks are 1.3–2 times more likely to have higher disciplinary referrals, females are from 25 to 62% less likely in each of the four schools, and those on free and reduced lunch are from two to eight times more likely to face discipline. The pattern holds for absences where in all four schools significant results show fewer absences means fewer referrals and more absences mean more referrals. In three of the four schools the variable female teacher was insignificant, as was the variable black male teacher. Although white teacher was significant for the whole sample, it was insignificant in each of the four schools individually. Also, black female teacher was significant for the whole sample; it was insignificant in three of the four schools. In School 3, black female teachers sent children to the office 2.3 times more than all others. Although when we dropped School 3 and ran a regression for the other three schools combined, black female teacher was still significant. Similarly, the black male teacher/black student variable was significant in the whole sample but was insignificant in all schools individually. White female teachers and the female teacher/female student were insignificant in all schools. For the white teacher/black student interaction, in two schools this was insignificant. In School 2 it was significant and showed that white teachers were 32% less likely to send a black student to the office and in School 3 they were 2.2 times more likely to refer black students.

Discussion

Noncognitive factors such as discipline (and its mirror, punishment in the form of discipline referrals) can affect school and labor market outcomes, human capital development, and thus the economic well-being of communities. It is well-known throughout the United States, but particularly in rural areas of the south, that black males drop out of school more frequently than white males, face higher levels of unemployment, and are incarcerated at a disproportionate rate than their white cohorts. Also students in low-income homes were three times more likely to drop out than those from average-income homes and nine times more likely than students from high-income homes (Rumberger, 1983). A 2004 U.S. Department of Education report shows that low-income students dropped out at an 11% rate while middle and high-income students only dropped out at 5% and 2% rates, respectively (Kaufman, Alt, and Chapman, 2004).

Wage disparities due to educational attainment are also well-known. In 2002, high school graduates earned 50% more than high school dropouts, while college graduates earned almost three times as much as high school dropouts (U.S. Department of Labor, Bureau of Labor Statistics, 2003). High school dropouts also face higher rates of unemployment (8.5%) compared with high school graduates and college graduates (5% and 2.7%, respectively) (U.S. Department of Labor, Bureau of Labor Statistics, 2006). Lewit (1992) notes that families headed by a high school dropout are twice as likely to have incomes below the poverty line as families headed with a high school graduate.

Students who don't finish high school are four times more likely than college graduates to be unemployed. They are far more likely to end up in prison or on welfare, and they die, on average, at a younger age. Beyond individual costs, dropouts take a huge toll on societal costs, in lost tax revenue, and increased expenditures for health care, corrections, food stamps, subsidized housing, and public assistance (Olson, 2006). Over a lifetime, an 18-year-old who does not complete high school earns about \$260,000 less than a person with

a high school degree, and contributes about \$60,000 less in federal and state income taxes. The combined income and tax losses aggregated over one cohort of 18-year-olds are about \$192 billion, or 1.6% of 2005 gross domestic product (GDP). Individuals with high school degrees live longer, have better indicators of general health, and are less likely to use publicly financed health-insurance programs than high school dropouts. If the 600,000 18-year-olds who failed to graduate in 2004 had advanced one grade, it would have saved about \$2.3 billion in publicly financed medical care, aggregated over a lifetime. If all those receiving assistance who are high school dropouts had a high school diploma, the result would be a total cost savings for federal welfare spending, food stamps, and public housing of \$7.9 billion to \$10.8 billion a year. A 1% increase in the high school completion rate of men ages 20–60 would save the United States as much as \$1.4 billion a year in reduced costs from crime incurred by victims and society at large. In short, anything, including how students are disciplined, that increases the high school dropout rate, is a deterrent to economic development (Olson, 2005).

This paper tested the hypothesis that the odds of a student being referred for disciplinary action in the middle school setting (8th grade) increases if the student is male, black, in special education classes, or is poor. We conclude that is indeed the case, with the exception of students assigned to special education classes. In particular, we find that low income students are up to eight times more likely to be sent for disciplinary referrals than others. We next tested the hypothesis that the gender and race of the teachers who refer students for disciplinary action have a significant impact on the first hypothesis. Here the evidence that there is a “color to discipline” in this school district is weak. In this case, white teachers are less likely than black teachers to send children to the office. However, on an individual school basis this was insignificant in all four schools. While black female teachers are slightly more likely to send children for discipline in the whole sample, this may be driven in part by only one of the four schools. The results are also weak for the black male teacher/black student

interaction given the small number of black male teachers in the system (less than 10%). A limitation of this paper is the lack of data on student family characteristics other than income. Most research using an education production function relates output to inputs that are directly controlled by policy makers, such as school characteristics, teacher quantity and quality, or curriculum, and those that are not so controlled by policy makers such as family environments. In most applications of the education production function the researcher lacks data on factors such as family characteristics. These omitted variables will then appear in the error term. If the omitted variables are correlated with the included variables, then the estimated parameters will be biased (Krueger, 1999).

Nevertheless, we still know little about how teachers’ race and those of their students affect the learning environment (Dee, 2004). In sequential articles in the *Review of Educational Research*, King (1993) and Cizek (1995) debated the limited presence of African-American teachers. As Cizek notes, “it would be unwise to suggest that African American teachers are de facto better teachers of minority students than are teachers of other ethnic backgrounds without substantial empirical evidence” (p. 90). Perhaps in terms of student achievement scores this is correct. However, in terms of the relationship between race and gender and how teachers discipline students, the limited presence of African American teachers is a concern. Nor do we know a great deal about the black teacher/black student discipline interaction. Addressing these issues through public policy would suggest that the hiring of more African American teachers could play a role in reducing the disproportionate disciplinary records of black students as well as more training of all teachers in disciplinary responses. Although we note that the issue of discipline referrals from black male teachers bears more consideration. More immediately, school systems can address any disproportionate discipline problems with an assessment of the discipline data and policies in their schools. Williams (1989) suggests a method of policy review for school districts that includes detailed discipline

data assessments, programs for effectively working with African-American students to deal with discipline issues, and the involvement of the school community.

What is clear is that discipline is being disproportionately applied with respect to blacks, particularly boys, and especially students who are poor. In all the coefficients in this study, those for free and reduced lunch are the largest. Being poor and especially being black and poor, is the most significant indicator of discipline referrals, even more so than extreme absences.

Finally, in a recent paper, Castillo et al. (2008) looked at children's time preferences as an important component of educational outcomes by using economic experiments to measure how children view the future. The study investigated experimentally (delay test) if children's time preferences vary across observable characteristics, such as race and gender, and whether any observed differences relate to incidents of discipline referrals. The study was conducted in the same four middle schools as the present study. Time preferences provide a measure for child patience—the less patient the student is with respect to forgoing immediate benefits for larger benefits in the future, the more likely he or she is to refrain from investing in school.

The study has two main conclusions. First, black boys have significantly larger discount rates than any other demographic group. Black girls are more impatient than white girls and white boys are not significantly more impatient than any girls. This says that black boys stand out as having the highest discount rates. The second main conclusion is that discount rates are correlated with the likelihood that a child has disciplinary referrals. Thus, just as there is a relationship between disciplinary referrals and black boys, there is a relationship between impatience and black boys—the exact causal relationship is still under investigation. Does impatience cause discipline problems for black boys or does the disproportionate application of discipline over the course of a school career, even if administered by a black or male teacher, affect how black children see the future? If the disproportionate application of discipline determines preference formation than the issue of

race and gender in teacher/student interactions requires further exploration.

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