Teacher and Principal Diversity and the Representation of Students of Color in Gifted Programs: Evidence from National Data

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Prepared for the annual meeting of the American Educational Research Association

April 2015

ABSTRACT
Students of color are significantly underrepresented in gifted programs relative to their white peers. Drawing on political science research suggesting that public organizations more equitably distribute policy outputs when service providers share characteristics with their client populations, we investigate whether the representation of students of color in gifted programs is higher in schools with racially/ethnically diverse principals and teachers. In a nationally representative sample of elementary schools created by merging two waves of data from the Civil Rights Data Collection and the Schools and Staffing Survey, we find that schools with larger numbers of black teachers or a black principal have greater representation of black students in their gifted programs. We find a similar relationship for Hispanic teachers and representation of Hispanic students. Further evidence suggests that a critical mass of teachers of color is necessary for teacher race/ethnicity to be associated with higher minority representation in gifted programs.

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Since at least the late 1960s, research has consistently documented the substantial underrepresentation of students of color in gifted programs (Ford, 1998). Recent data show, for example, that black students are only 59% as likely to receive gifted services as would be predicted if their gifted participation was proportionate to their presence in the broader student population.[1] To receive gifted services, students must go through multiple steps, including identification as potentially gifted, referral for evaluation, and the evaluation itself, and research suggests that students of color are less likely to pass through each of these stages than their white peers (McBee, 2006; National Research Council, 2002). Reasons for these disparities are complex but include unequal teacher perceptions of student giftedness across student groups

(Ford, Grantham, & Whiting, 2008; Hargrove & Seay, 2011) and the use of single, potentially culturally biased tests to assess giftedness as a unidimensional construct (Ford, Grantham, & Whiting, 2008; Harris, Brown, Ford, & Richardson, 2004). Less often discussed is the fact that gifted representation among students of color can vary markedly from school to school, even among schools with similar student demographic compositions. Some differences are attributable to state-to-state differences in gifted definitions and identification processes, but even within states (and even districts), variation in implementation of policy can lead to considerable disparity in rates of gifted identification (National Research Council, 2002).

Relatively few studies, however, have examined the school-level factors influencing the rates of placement in gifted programs across different student racial and ethnic groups (Ford, 1998; McBee, Shaunessy, & Matthews, 2012; McBee, 2006). Motivated by the long literature on what is termed *bureaucratic representation* in political science, this study focuses on one particular set of potentially important factors: the demographic characteristics of the school's teachers and principal. Bureaucratic representation theory suggests that more descriptively representative public organizations—i.e., those whose employees share demographic characteristics with client populations—tend to more equitably distribute policy outputs among client groups (see AUTHOR, 2015; Kennedy, 2014; Meier, 1993). The potential mechanisms are varied and include behavioral responses to descriptive representation by both bureaucrats—in this case, educators—and the clients (students and parents) themselves, including greater sensitivity of minority bureaucrats to minority client needs, advocacy by minority bureaucrats for organizational policies that ameliorate past disparities between minority and nonminority clients, and increased likelihood that minority clients seek out organizational services in the presence of bureaucrats "like them" (Lim, 2006). Research suggests that often these mechanisms only

surface when a “critical mass” of bureaucrats from a minority group are present in the organization (Henderson, 1979; Kanter, 1977; Thompson, 1976).

Assignment to gifted services may be a particularly likely place to observe the effects of representation because of the roles subjectivity and discretion play in the assignment process. Except in the case of universal screening, which is employed in some systems (e.g., Card & Giuliano, 2014), gifted assignment begins with referral for evaluation, typically by a classroom teacher, on the basis of the teacher’s perception of the student’s potential for giftedness (McBee, 2006). We may expect teacher race or ethnicity to matter for which students are referred for testing because, for example, teachers of color may be more attuned to giftedness among racially and ethnically diverse students due to heightened sensitivity to cultural differences among students from different groups. This consideration may be especially important given evidence that teachers are less likely to perceive giftedness among students of color than among white students even when presented with evidence about the students that is otherwise similar (Elhoweris, Mutua, Alsheikh, & Holloway, 2005). At the same time, parents from minority populations may feel more comfortable communicating with teachers from similar backgrounds and thus more likely to request that students be evaluated for gifted services. Once referred, students are formally tested using standardized assessments and other metrics, then often a placement committee, again consisting of teachers and other personnel, such as school psychologists, reviews the information gathered during evaluation and makes a final determination of whether the student should be officially designated as gifted (National Research Council, 2002). Evaluation and placement decisions may present additional opportunities for teacher representation effects for students of color. For example, teachers of color may be more likely to express concern about evaluation procedures that disadvantage nonwhite students (e.g.,

IQ tests) and advocate for the use of multiple measures of giftedness or other changes to evaluation and placement procedures that improve the likelihood of the recognition of giftedness among students of color (Ford, Grantham, & Whiting, 2008;; Joseph & Ford, 2006).

Bureaucratic representation research has also found evidence that the race and ethnicity of managers in a public organization can affect the distribution of policy outputs (Grissom & Keiser, 2011; Meier & Stewart, 1992), suggesting that principal race/ethnicity may have effects on the representation of students of color in a school's gifted programs as well. Although principals are less likely than teachers to be directly involved in gifted referral, evaluation, and placement decisions, recognition of inequities in assignment patterns among white and nonwhite students may make nonwhite principals more likely to shape school assignment practices to increase minority gifted representation. By implementing policies such as allowing gifted nominations from non-teachers, using multiple measures to evaluation giftedness, and providing multicultural training to teachers to help circumvent biases in the identification process, principals are positioned to influence minority representation within gifted programs (Harris et al., 2004; Joseph & Ford, 2006; Matthews & Shaunessy, 2010; McBee, Shaunessy, & Matthews, 2012).

Investigation of connections between the diversity of a school's educators and the representation of students of color in gifted programs is particularly important in light of the growing mismatch between teacher and student demographics in American schools (AUTHOR, 2015; Boser, 2014). Some earlier bureaucratic representation research has linked teacher workforce diversity to greater rates of gifted participation among black and Hispanic students, though this research has been published outside of education and remains unfamiliar to education scholars (e.g., Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011; Rocha & Hawes, 2009).

The purpose of this study is to build on and extend this prior work in several key ways. First, we investigate connections between teacher racial/ethnic diversity and gifted representation using the most recently available national data (from the 2011-12 school year) to test whether associations between teacher demographic characteristics and gifted composition observed with earlier data remain relevant and how they may have changed. More specifically, we ask: to what extent are the proportions of black and Hispanic teachers in a school associated with the racial composition of students assigned to gifted programs? Second, we investigate the critical mass phenomenon observed in representation studies in other organizational settings. That is, we ask: is there evidence that a critical number of teachers of color must be present in a school before teacher race/ethnicity becomes associated with the racial/ethnic composition of the school's gifted program? Third, we explore whether the race/ethnicity of the school's principal is associated with gifted representation, even after controlling for the characteristics of the teacher workforce, a possibility not considered in prior empirical work. Specifically, we ask whether schools with black or Hispanic principals have gifted programs that are more representative of students from those racial/ethnic backgrounds and, furthermore, whether principal race/ethnicity moderates the connection between teacher diversity and the composition of the school's gifted programs.

We begin by discussing bureaucratic representation theory as a framework for understanding the connection between the demographic diversity of a school's faculty and differential gifted placement rates for white students and students of color. We then discuss our data and methods before turning to a presentation of the study's results. The final section concludes with a discussion of the implications of the findings for policy and practice in the area

of gifted education and efforts to increase equity in the provision of school services more generally. We also discuss study limitations and ideas for future work.

Bureaucratic Representation Theory and Application to Gifted Placement

We draw on bureaucratic representation theory, a well-established theoretical framework in the fields of political science and public administration literature, to guide our investigation into how teacher and principal roles in the identification, referral, and evaluation processes for gifted programs may connect educator diversity to disparate rates of gifted placement across different racial groups. Representation scholarship begins from the observation that the composition of the public bureaucracy influences the implementation of public policy; that is, who the providers of government services are matters for how policy outputs are distributed. In particular, scholars examining a variety of contexts have repeatedly made empirical connections between *descriptive representation* in the bureaucratic workforce—that is, the degree to which public sector workers share demographic characteristics such as race, ethnicity, or gender with the populations they serve—and greater access to policy outputs for traditionally disadvantaged groups (AUTHOR, 2015). As one example, in one study, Equal Employment Opportunity Commission field offices employing more black and Hispanic investigators were shown to bring a greater number of charges on behalf of black and Hispanic complainants (Hindera, 1993).

These connections have also been made in prior research on representation in schools (see AUTHOR, 2015, for a review). Bureaucracy scholars have long looked towards teachers as quintessential *street-level bureaucrats*—government professionals who, like police officers or social workers, work directly with client populations (i.e., students and their families) in roles with substantial discretion and autonomy (Lipsky, 1980)—and thus viewed schools as verdant ground for testing many areas of bureaucratic theory. Work in this tradition has linked a larger

presence of black and Hispanic teachers to improved treatment or outcomes for black and Hispanic students along a variety of dimensions, including lower rates of exclusionary discipline (Meier & Stewart, 1992; Grissom, Nicholson-Crotty, & Nicholson-Crotty, 2009), lower likelihood of placement in special education (Fraga, Meier, & England, 1986; Rocha & Hawes, 2009), and higher pass rates on standardized tests (Meier, Wrinkle, & Polinard, 1999; Weiher, 2000). Researchers also have linked teacher racial and ethnic diversity to placement rates for nonwhite students in gifted programs (Grissom, Nicholson-Crotty, & Nicholson-Crotty, 2009; Rocha & Hawes, 2009), particularly in schools where nonwhite students are assigned very infrequently relative to their proportion in the overall school population (Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011).

Researchers have put forth a number of mechanisms through which descriptive representation provides substantive benefits for underserved client populations, including both direct actions by the minority bureaucrat and indirect effects minority bureaucrats may have on the behaviors of their colleagues or the client population itself (Lim, 2006). We illustrate the main hypothesized mechanisms in the context of assignment to gifted services.

The mechanism most commonly set forth in the literature is that descriptive representation benefits minority clients because minority bureaucrats exercise discretion towards them in beneficial ways. Some scholars have expressed concern that this beneficial exercise of discretion simply reflects bias (Mosher, 1968), as would be the case if an African American teacher, presented with a white and an African American student of similar capacities, was more inclined to refer the African American student for gifted evaluation. Others have suggested instead that shared demographic characteristics proxy for shared background, values, beliefs, or understanding, which may lead to discretionary actions by minority bureaucrats that benefit

minority clients (Lim, 2006). As an example, a Hispanic teacher may be more likely to refer a Hispanic student to gifted services because linguistic or cultural sensitivity better equips her to recognize giftedness in Hispanic students.

Other mechanisms linking bureaucratic diversity to improved outcomes for minority client populations are indirect, operating through changes in the behaviors of others. A minority teacher may be more attuned to practices within the organization that disadvantage minority students and thus advocate for changes to those practices, either informally or formally. An example of the informal case is the nonwhite teacher who pushes her white colleagues to look closely at nonwhite students for signs of giftedness or provides them with some tips or ideas for assessing giftedness in culturally diverse students. In the more formal case, a nonwhite teacher may be more likely to recognize bias towards nonwhite students in tests used for gifted evaluation and advocate for the school to use a different test (Ford, Grantham, & Whiting, 2008). In both instances, the presence of nonwhite teachers in the school benefited nonwhite students by nudging the environment in a direction that increased their probability of success.

Descriptive representation may also benefit minority clients indirectly by changing the behaviors of the clients themselves. A Hispanic parent may be more likely to approach her child's Hispanic teacher to request that the student be referred for gifted services, for example, if shared language or culture increases the parent's comfort in making the request. Students with teachers of similar demographic backgrounds may also perform better on assessments that make gifted identification more likely. This demographic similarity may improve testing outcomes via a role modeling effect, wherein students work harder to gain approval from teachers like them (Lim, 2006), or by reducing stereotype threat, a psychological impediment to performance based

on anxiety around stereotypes, which may be more salient in the presence of other-race teachers (Dee, 2005).

Other research on representation in organizations suggests that the impact of descriptive representation on outcomes for diverse clients is unlikely in the absence of a critical mass, or numerical threshold, of bureaucrats from the minority group (Henderson, 1979; Kanter, 1977; Thompson, 1976). These scholars focus on the impact minority bureaucrats can have on organizational policies or practices, suggesting that only when minorities have enough of a presence can they build internal support to effect change (Henderson, 1979; Thompson, 1976). Representation effects will thus be nonlinear, and in fact a pattern consistent with a critical mass condition was observed in Hindera's study of EEOC complaints (see Hindera & Young, 1998). The threshold for when descriptive representation is likely to matter is unclear. Kanter (1977) proposed that the minority group must comprise 15% of the organizational workforce before descriptive representation would produce substantive effects. Critical mass effects have largely gone ignored in studies of schools, with the exception of one study by Meier (1993), which found some evidence that the presence of Hispanic principals (but not teachers) begins to have a positive association with student disciplinary and achievement outcomes only once they comprise between 16 and 26 percent of school leaders. No studies of which we are aware have examined the critical mass idea in the context of gifted assignment.

Studies similarly have overlooked the potential for representation effects on gifted outcomes for school principals. Principals may influence gifted assignments in their schools by implementing referral and evaluation policies that may increase rates of placement for underrepresented groups. For example, students in Florida who attended schools with alternative policies in place to increase gifted representation by nonwhite students had nearly twice the

probability of being identified as gifted as students attending schools without these plans (McBee, Shaunessy, & Matthews, 2012), illustrating a school-level policy change via which principals might affect the gifted participation of students of color. It is also possible that nonwhite principals could encourage referral of students of color by providing professional development to teachers on recognizing giftedness for underserved groups or implementing a systematic screening process to increase opportunities for identification. A nonwhite principal's presence could also make the parent of a student of color more comfortable in requesting a referral form for their child. Some limited empirical evidence suggests that minority principals are associated with improved schooling outcomes for minority students in such areas as referral to special education or graduation rates (Meier, 1993; Meier & Stewart, 1992; Pitts, 2005). This work suggests that attention to possible principal representation effects in gifted assignments is warranted as well.

Data

We pair two years of nationally representative data from two sources: the Schools and Staffing Survey (SASS) and survey data collected by the Office for Civil Rights (OCR) in the 2003-04 school year and again in 2011-12, referred to in the remainder of the study as 2004 and 2012, respectively. We supplement these data with additional district- and school-level information from the Common Core of Data (CCD). SASS uses a stratified sampling method to gather information on demographic characteristics, organizational processes, and attitudes of principals and a random selection of teachers for each school. We merge the SASS data with survey data administered by the Department of Education's Office for Civil Rights (OCR), which also uses a stratified random sampling method to collect information on academic grouping, discipline, and educational attainment disaggregated by gender and race from

approximately schools. Given that students are substantially more likely to be identified for gifted services in elementary school, we restrict our sample to U.S. public elementary schools with gifted programs that can be matched between the two samples, then further restrict the analytic sample to non-charter, non-magnet schools. The final sample size is 2,170 schools. Approximately 6.2% of elementary students were designated as gifted in the matched sample in both waves of data. Table 1 provides descriptive statistics for the pooled sample and for each wave separately, with asterisks in the rightmost column indicating statistically significant differences between the 2004 and 2012 waves from two-sided *t*-tests.

Dependent Variables

To measure the presence of students from different racial and ethnic backgrounds in gifted programs, we follow prior disproportionality work (e.g., McBee, 2006; National Research Council, 2002) and use a series of composition indices calculated, for each racial/ethnic group, as the number of students from that group in the school's gifted program divided by the total number of gifted students. The composition index of Hispanic students, for example, is simply the number of Hispanic gifted students in the school divided by the total number of gifted students. Using OCR data, we calculate composition indices for white, black, and Hispanic students. As Table 1 shows, the composition of the average elementary school gifted population within the pooled sample is approximately 72% white, 9% black, and 10% Hispanic, in contrast to the composition of the average elementary school population at large, which in these data is 62% white, 14% black, and 15% Hispanic.[2] These pooled averages, however, mask important changes between the samples over the two waves. In particular, the fraction of the average school's gifted population that is black fell from nearly 11% in 2004 to only about 8% in 2012 ($p < 0.01$), perhaps reflecting a similar decline in the average school's overall student population,

which was 16% black in 2004 but only 12% black in 2012. At the same time, the percent of elementary students who are Hispanic significantly increased from 14.5% in 2004 to 16.5% in 2012 ($p < .05$), although the percentage of gifted students who are Hispanic did not change significantly. Both the proportion of elementary students who are white and the proportion of gifted students who are white remained constant over the two waves of data.

An alternative means of illustrating the underrepresentation of black and Hispanic students in gifted programs appears in Figure 1, which shows the percentage of each racial/ethnic group in gifted programs separately for 2004 and 2012. The figure demonstrates that whereas nearly 8% of white students are identified for gifted services, only 3–4% of black and Hispanic students are similarly identified, percentages that remained very stable over the two waves of data. This stability suggests that the changes in the proportions of students in gifted programs from black and Hispanic groups between 2004 and 2012 shown in Table 1 indeed reflect changes in school composition rather than changes in the allocation of slots in gifted programs across different groups of students.

Independent Variables

The main independent variables for this study capture the racial/ethnic composition of the teacher workforce and the race/ethnicity of the principal in each school in the pooled sample. In particular, we use SASS school questionnaire data to calculate the percentage of teachers in each school who are Hispanic, black, or white. These percentages are, on average, 4%, 6%, and 88%, respectively. The percentage of teachers who are black dropped from approximately 7% in 2004 to above 5% in 2012 ($p < 0.05$). The percentage of Hispanic teachers remained similar between the two waves, but the percent of teachers who are white increased from approximately 87% in 2004 to 89% in 2012 ($p < 0.01$). From SASS principal questionnaire data we also create two

separate binary indicator variables for whether the school's principal is Hispanic, black, or white. Approximately 5% of principals in the sample are Hispanic, 10% are black, and 88% are white. Principal race stayed constant across both waves of data for Hispanic and black principals, but the percentage of white principals increased slightly from 87% to 89% ($p < 0.10$).

Control Variables

Models include control variables to account for other factors that might explain variation in assignment to gifted programs. Aside from the fraction of all students in the school assigned to gifted programs—which comes from OCR data—and locale (e.g., urban) and expenditure information—which are from the CCD—control variables are primarily taken from SASS. We include the percentage of all students who are black and the percentage who are Hispanic because the proportion of these populations should be highly correlated with the proportion of students in gifted programs. We also include the percentage of students within a school that are eligible for free or reduced-price lunch (FRPL) because these students are less likely to be placed in gifted programs (McBee, 2006). The percentage of students who are eligible for FRPL increased significantly from approximately 46% in 2004 to 50% in 2012 ($p < 0.01$). We control for school size, district size, and locale type because these factors may be associated with standardization of gifted identification, referral, and testing processes and different levels of discretionary academic grouping. We note that the percent of students who attended schools in various locales changed significantly between the two waves of data. The percentage of students attending schools in cities declined from 33% to 20% ($p < 0.01$) while the percentage of students in rural areas increased from 23% to 33% ($p < 0.01$). The percentage of students attending schools in suburban areas or small towns remained relatively constant across both waves of data. The observable differences likely stem from changes in urban locale codes within the CCD

across 2004 and 2012.[3] In addition, the average district size decreased significantly between the two waves, from more than 35,000 students to just less than 22,000 ($p < 0.01$). Per pupil expenditure in constant 2012 dollars is included as a control for school resources, which may influence the size of a school's gifted program; this value significantly increased from approximately $10,850 in 2004 to $11,530 in 2012 ($p < 0.01$).

Methods

We estimate a series of ordinary least squares regression models where the dependent variable is the percentage of gifted students in one of three different race or ethnicity groups (Hispanic, black, or white). The main independent variables of interest are the proportion of teachers who are Hispanic, black, or white, and two binary variables representing if the principal is Hispanic or black.

Each model incorporates state-level and year fixed effects in order to account for differences in state procedures related to gifted program funding and assignment and for descriptive differences across the two waves of data. We cluster standard errors at the district-level to correct for correlated errors within districts. Samples used for estimation for each dependent variable are limited to schools with a student race group between 1% and 99% of the total population.

If gifted assignment is approximately zero-sum, as Nicholson-Crotty, Grissom, and Nicholson-Crotty (2011) argue, then a larger percentage of teachers from one racial group should be associated with a decrease in the composition index from other racial groups to the gifted program. Therefore, to observe the zero-sum trade-off, we also model the relationship between black and Hispanic teachers on the composition index of white students in gifted programs.

Additionally, we test for the moderating influence of the principal's race, investigating

the hypothesis that teachers of a certain race will have a stronger influence over the racial composition of the school's gifted program when the principal is also from a minority group. To do so, interactions between the percentage of teachers who are of a certain race (black or Hispanic) and the dummy for whether the principal is of that same race or (black or Hispanic) are included in the model.

Finally, we test for critical mass effects by entering teacher race/ethnicity percentages as a series of categorical variables defined over discrete ranges (e.g., 1–5%, 6–10%, and so forth). These dummy variables allow us to examine whether the association between the percentage of teachers who are of a certain race and the placement of students of color into gifted programs is nonlinear. A critical mass hypothesis would predict little or no association when the fraction of teachers of color in a school was very low, with an association only becoming apparent beyond some critical threshold of nonwhite teachers in the school.

Results

Teacher Race/Ethnicity and Gifted Assignments

We begin by estimating the racial/ethnic composition of the school's gifted program in the pooled sample as a function of the fraction of black and Hispanic teachers in the school, plus controls. For consistency with prior research (e.g., Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011), initially principal race/ethnicity is not included. Models for Hispanic, black, and white gifted student composition were run separately. Results are shown in Table 2. The first column shows the results for the model with the percentage of gifted students who are Hispanic as the dependent variable. The second and third columns show results for black students and white students, respectively.

Our results confirm findings from these earlier studies. The percentage of Hispanic teachers is positively related to the percentage of gifted students who are Hispanic. As shown in column 1, the coefficient on percent of teachers who are Hispanic ($\beta = 0.31$, $p < 0.01$) means that a 10% increase in Hispanic teachers is associated with a 3.1% increase in Hispanic gifted students. This increase is meaningful, given that the sample average of gifted students who are Hispanic is just 10%. The percent of black teachers has no detectable relationship with the percentage of gifted students who are Hispanic. The relationship between Hispanic teachers and Hispanic students exists when controlling for the student body makeup, urbanicity, per-pupil expenditure, and year.[4]

The association between percent Hispanic teachers and the percentage of gifted students who are Hispanic is shown in Figure 2. The solid line represents the relationship between Hispanic teachers and Hispanic students in 2004, and the dotted line represents the same relationship in 2012. Light grey lines represent the 95% confidence intervals for the predicted margins. Figure 2 shows that the percentage of gifted students who are Hispanic is predicted to increase as the percent of Hispanic teachers increases. The nearly overlapping year lines in this figure show that the relationship between Hispanic teachers and Hispanic gifted students remained constant between the two waves of data.

Column 2 of Table 2 reports the results from the model with the black gifted composition index as the dependent variable. These results show that, even after controlling for various school and district characteristics, a 10% increase in the percentage of black teachers in a school is associated with an increase in the representation of black students in gifted programs of about 3.2% ($p < 0.01$). Considering that the sample average percent of gifted students who are black is 9.4%, a 3.2 percentage point change is substantively significant, representing an increase of 34%,

on average. The proportion of Hispanic teachers has no detectable relationship with the composition index of black gifted students. Figure 3 shows predicted composition index values for black students according to the percentage of black teachers in the school, again separately for 2004 and 2012 (the two are statistically indistinguishable).

The results from the model with the percentage of gifted students who are white as the dependent variable are shown in column 3 of Table 2. Schools with larger proportions of minority teachers are associated with less white representation in gifted programs ($p < 0.01$). A 10% increase in the proportion of either Hispanic or black teachers is related to approximately 4% or 3% drop in the percent of gifted students who are white, respectively. These results are consistent with the idea that assignment of a student to gifted services approximates a zero-sum game (Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011); increases in the percentages of gifted students who are Hispanic or black are associated with a decrease in the percentage of gifted students who are white, holding other factors constant.

Although not our main focus, before moving on it is worth pointing out a few notable patterns from the control variables found in Table 2. The percentage of students in the school who are Hispanic or black is positively associated with the percentage of gifted students in the school that is Hispanic or black, respectively, and negatively related to the percentage of gifted white students. Also, the total percentage of gifted students in a school is positively related to the composition index for Hispanic students ($\beta = 0.09$, $p < 0.01$). Additionally, as the percentage of student eligible for FRPL increases by 10%, the percent of gifted students who are white is predicted to decrease by 0.8% ($p < 0.01$). Small town schools are negatively associated with the composition index of Hispanic students ($\beta = -3.21$, $p < 0.01$) but positively related to the percent of gifted students who are white ($\beta = 4.27$, $p < 0.01$). District size (logged) is negatively

correlated with the percentage of gifted students who are white (β = -1.39, $p < 0.01$) but positively correlated with the percentage of gifted students who are black (β = 0.66, $p < 0.10$). Finally, the percentage of gifted students who are white was smaller in 2012 than in 2004 (β = -0.29, $p < 0.01$).

Critical Mass Analysis

To test for evidence that a critical mass of teachers from a racial/ethnic group is required in a school before there is an association between teacher race/ethnicity and the composition of the school's gifted program, we re-estimated Table 2 with a series of indicators representing varying percentages of teachers who are Hispanic and black. Results are shown in Table 3. As in Table 2, the three columns represent the results from three models run with the dependent variable as the composition index of the gifted program for each of Hispanic, black, and white students.

Coefficients in Table 3 generally show evidence of a critical mass requirement. Model 1 indicates a large jump in the percentage of students in gifted programs who are Hispanic once the fraction of teachers who are Hispanic reaches between twenty and thirty percent. This evidence is easier to see in Figure 4, which graphs the results from this model. The figure shows that Hispanic representation in gifted programs hovers around 10% when the school has fewer than 20–30% Hispanic teachers but jumps to around 25% once that threshold is reached, with no evidence that the fraction continues to climb as the percentage of Hispanic teachers increases beyond that point.

The results from the model with black students as the dependent variable are shown in column 2 of Table 3. Turning to the coefficients lower in the table that categorize the percentage of black teachers into bins, we see a relationship that is similar to the Hispanic student–Hispanic

teacher result. Figure 5, which graphs the predictions from these coefficients, shows the same jump at around 20–30% black teachers, with some evidence of further increases for higher values.

The results for the model with white student as the dependent variable are shown in column 3 of Table 3. The results indicate that there is a tradeoff with the percent of gifted students who are white with those who are Hispanic or black. The significantly positive relationships for minority gifted students and minority teachers are inversely related to the relationships between minority teachers and white students. As the percent of Hispanic or black teachers reaches between 20-30%, the percent of gifted students decreases at nearly the same magnitude as the increases for students of color.

Examining Principal Race/Ethnicity

The next set of models, reported in the first three columns of Table 4, add principal race and ethnicity measures as covariates. As in Tables 2 and 3, each of these columns represents a different race/ethnicity composition variable as the dependent variable (Hispanic, black, and white). The first column shows that the coefficients for the percentage of Hispanic and black teachers are similar in magnitude to those shown for Hispanic students in Table 2. The race/ethnicity of the principal, however, shows no evidence of a relationship with the proportion of gifted students who are Hispanic.

Column 2 shows results for black students, and again the coefficients for Hispanic and black teachers are similar to those in the related model in Table 2. Here, the presence of a black principal has a significantly positive association with the percent of gifted students who are black ($\beta = 3.76$, $p < 0.05$), meaning that the presence of a black principal is associated with approximately a 3.8 percentage point increase in the share of gifted students who are black. This

shift is roughly equivalent to the one associated with a 10% increase in the percentage of teachers who are black in the school.

The results for white students are shown in column 3. The magnitude of the coefficients for percent Hispanic and percent black teachers are nearly identical to those in Table 2 (with both coefficients statistically significant at the 0.01 level). The presence of a Hispanic or black principal is not statistically associated with the proportion of gifted students who are white at conventional levels, though the coefficient on the black principal variable is relatively large in magnitude and negatively signed.

Columns 4 through 6 of Table 4 report the results of adding interactions between (a) the binary indicator for having a black principal and percent of black teachers and (b) the binary indicator for having a Hispanic principal and percent of Hispanic teachers. Column 4 represents the results when the dependent variable is the percent of gifted students who are Hispanic. The takeaway from this column is that neither of the interaction terms is statistically significant. The predictive margins from this model are shown in Figure 6. The dotted line represents the predicted percentage of gifted students who are Hispanic across increasing percentages of teachers who are Hispanic for schools with a Hispanic principal. The solid line represents that relationship for non-Hispanic principals. The lighter-colored lines represent the 95% confidence intervals for those predictions. The figure shows that while the predicted percentage of gifted students who are Hispanic is predicted to increase as the percent of Hispanic teachers increases, there is no moderating influence of a Hispanic principal on that relationship, evidenced by the substantially overlapping confidence intervals.

The results from the model for black students as the dependent variable are shown in column 5. For black students, there is evidence of an important interaction. The coefficient on

the interaction of black principal with black teachers is quite large ($\beta = 0.24$, $p < 0.01$), suggesting that the association between the proportion of black teachers in the school and the assignment of black students to gifted programs is magnified in the presence of a black principal. Figure 7 illustrates this result by plotting the predictive margins. The dotted line represents the predicted percent of black gifted students across increasing percentages of black teachers in schools with a black principal, and the solid line represents the same relationship for schools with a non-black principal. The light gray lines represent the 95% confidence intervals. At low percentages of black teachers in a school, the predicted black composition index for gifted students is similar for schools with black and non-black principals. The slopes of the two lines are different, however, so that increasing proportions of black teachers have a larger positive effect in schools with black principals. When the percentage of teachers who are black is 30%, schools with black principals have approximately 20% of gifted students who are black, compared to only 13% under non-black principals. When the percentage of teachers who are black is 80%, the difference is even larger: 40% of gifted students are predicted to be black under black principals, compared to only 20% under non-black principals.

Discussion and Conclusions

Traditionally disadvantaged students who often are excluded from gifted programs perhaps benefit most academically from receiving gifted services (Card & Giuliano, 2014), so identifying why some school are more likely than others to provide students of color with these services is an important endeavor for educational research. Consistent with prior research outside education (e.g., Rocha & Hawes, 2009), our analysis shows that descriptive representation among an elementary school's faculty and leadership is associated with greater access to gifted programs for black and Hispanic students. In a large, national data set spanning two time points,

larger percentages of black teachers in the school correlate to increased gifted representation among black students. The relationship between Hispanic teacher representation and Hispanic student presence in the school's gifted program is of an almost identical magnitude. At the same time, gains for blacks and Hispanics in schools with more diverse teaching faculties appear to come at the expense of white students, though prior research suggests that this tradeoff only occurs in schools where nonwhite students are very underrepresented (Nicholson-Crotty, Grissom, & Nicholson-Crotty, 2011). We also find evidence of non-linearities in these relationships; a critical mass of racial ethnic minority teachers—in the range of 20% to 30%—may be necessary before descriptive representation translates into differences in outcomes for students in assignment to gifted programs.

Our results also demonstrate an association between principal race and the composition of gifted programs. Schools with black principals have significantly higher gifted representation among black students. The presence of a black principal is associated with a 3.8% increase in black representation in the school's gifted program, equivalent to the gain associated with increasing the school's cadre of black teachers by 13%. Associations between teacher representation and assignment of black students to gifted programs are stronger in these schools as well. However, we uncovered no parallel results for Hispanic principals and students, though we note that only about 5% of the schools in our sample were led by a Hispanic principal, potentially limiting the power to distinguish such relationships.

These results point towards a greater need to understand the implications of teacher workforce diversity in American education, particularly in light of shifting demographics of the U.S. student population. Among all elementary schools sampled by SASS, for example, the average school's Hispanic student population grew by approximately 4 percentage points

between the 2003-04 and 2011-12 administrations. Yet over that same time period, teacher and principal diversity changed much more slowly, with the fraction of Hispanic teachers in the average elementary school increasing by less than one percent, and the percentage of Hispanic principals actually slightly decreasing. In other words, the different pace of these trends suggests that, for Hispanic students, descriptive representation in the educational workforce is, in fact, declining. An implication of this study is that failure of the public school system to recruit Hispanic teachers and principals at increasing rates may have consequences for the educational services provided to Hispanic students, at least in the area of gifted programs.

Of course, diversification of the educator workforce is not the only means for ensuring greater access to gifted services for students of color. Universal screening and the use of multiple measures of giftedness are examples of strategies that can help increase equity in access to gifted programs (Ford, 1995). Such strategies are unlikely to eliminate the role of teacher discretion in the gifted assignment, evaluation, and placement processes, however, which means that training and professional development aimed at breaking the connection between teacher race/ethnicity and differential access for students by, for example, helping teachers recognize giftedness among students from diverse cultural backgrounds, may be necessary for combatting gifted underrepresentation among students of color.

This last point speculative, however, highlighting the need for additional research to understand why teacher and principal race are associated with differential assignment. Certainly different capacities for teachers to identify giftedness among students of the same race or ethnicity is a potential mechanism, but there are many others, including different assignment practices employed by schools with more diverse teachers, role modeling effects that elicit greater evidence of giftedness among students of color, and greater propensities for parents to

engage with the school around gifted identification and evaluation when connected to teachers or principals of the same demographic background (AUTHOR, 2015; Lim, 2006). Moreover, we cannot be sure whether teacher or principal race becomes a salient characteristic during the identification, referral, evaluation, or placement stage, or some combination. Future research employing student-level data or more detailed data on gifted placement processes within and across schools can further elucidate the empirical linkage to which this study draws attention.

The study faces limitations beyond the depth of the data it utilizes. Most importantly, the analysis relies on regression methods that do not warrant causal conclusions about the relationship between educator demographic characteristics and the representation of students of color in gifted programs. We cannot be sure that increasing the numbers of black teachers in a school, for example, will affect the school's gifted population or over what time frame, only that elementary schools with higher percentages of black teachers have higher rates of gifted participation among black students, conditional on other variables in our models. These results could be driven by other factors we cannot observe. For example, schools in more progressive districts may place a priority on ensuring diversity both in teaching and in student programs, or schools that emphasize equity among students may have an easier time attracting teachers and principals of color. Although a large body of research on representation suggests that educator diversity can lead to differential schooling outcomes for students of color, and quasi-experimental research examining other outcomes finds evidence consistent with this idea (e.g., Dee, 2005), additional research is necessary to substantiate a causal relationship.

Even in the absence of a causal linkage, the patterns we document in this article should raise concerns among advocates for equity, in gifted services and beyond. A correlation between the racial or ethnic composition of a school's faculty and the racial and ethnic composition of its

gifted program suggests that a child's access to gifted services is a function of a school characteristic over which he or she has little control and which bears little apparent relationship to whether or not the child is indeed gifted. This study lays a foundation for education researchers to dig more into this important empirical connection and for policymakers to begin to consider steps that might be taken to ensure that gifted students receive gifted services regardless of such school contextual variables.

Appendix Table A.1. Results from OLS Regression Testing Year Interactions with Teacher Variables, DV: Percent of Gifted Students from Each Race Group

	(1) Hispanic Students	(2) Black Students	(3) White Students
Year=2012	-0.19	0.89	-1.85**
	(0.626)	(0.607)	(0.903)
Percent of teachers who are Hispanic	0.29***	0.04	-0.33***
	(0.074)	(0.042)	(0.083)
Percent of teachers who are Hispanic x Year=2012	0.03	-0.05	-0.10
	(0.076)	(0.041)	(0.089)
Percent of teachers who are black	0.06	0.34***	-0.29***
	(0.050)	(0.059)	(0.067)
Percent of teachers who are black x Year=2012	0.02	-0.05	-0.02
	(0.043)	(0.052)	(0.065)
Percent of students who are gifted	0.09***	0.03	-0.07
	(0.029)	(0.025)	(0.045)
Percent of students who are Hispanic	0.73***	-0.00	-0.56***
	(0.040)	(0.027)	(0.047)
Percent of students who are black	0.03	0.69***	-0.68***
	(0.035)	(0.043)	(0.043)
Percent of students who are eligible for FRPL	-0.00	0.03	-0.08***
	(0.019)	(0.017)	(0.026)
Suburb	-0.83	0.09	1.24
	(0.818)	(0.837)	(1.159)
Small Town	-3.19***	-0.91	4.23***
	(1.161)	(1.018)	(1.513)
Rural	-0.89	1.00	1.69
	(0.913)	(0.983)	(1.245)
School size (in 100s)	-0.04	-0.21	-0.23
	(0.162)	(0.156)	(0.202)
District Size (Logged)	-0.09	0.64*	-1.40***
	(0.315)	(0.377)	(0.473)
Per Pupil Expenditure (in 2012 $1000)	-0.07	0.15	-0.41**
	(0.120)	(0.147)	(0.206)
Constant	-1.11	-12.01***	115.91***
	(3.628)	(4.020)	(5.124)
Observations	1830	1660	2050
Adjusted R^2	0.609	0.707	0.587

Standard errors clustered at the district level shown in parentheses. *(p<0.10), **(p<0.05), ***(p<0.01). Models include state fixed effects. Samples limited to schools containing between 1% and 99% of students in each DV group. Reported sample sizes rounded to the nearest 10 per NCES nondisclosure rules.

Appendix Table A.2. Results from OLS Regression Testing Year Interactions with Teacher and Principal Variables, DV: Percent of Gifted Students from Each Race Group

	(1) Hispanic Students	(2) Black Students	(3) White Students
Year = 2012	-0.22	0.90	-1.76*
	(0.626)	(0.591)	(0.903)
Percent of teachers who are Hispanic	0.28***	0.00	-0.31***
	(0.076)	(0.044)	(0.087)
Percent of teachers who are Hispanic x Year = 2012	0.08	-0.01	-0.15
	(0.087)	(0.046)	(0.095)
Percent of teachers who are black	0.09	0.30***	-0.29***
	(0.058)	(0.062)	(0.073)
Percent of teachers who are black x Year = 2012	-0.04	-0.04	0.04
	(0.055)	(0.064)	(0.084)
Principal is Hispanic	2.26	2.79	-2.46
	(2.959)	(1.750)	(2.880)
Principal is Hispanic x Year = 2012	-5.98	-4.00*	6.24
	(3.953)	(2.105)	(4.276)
Principal is black	-3.04	4.35**	-0.68
	(2.359)	(2.096)	(2.577)
Principal is black x Year = 2012	4.59	-1.48	-4.91
	(3.195)	(2.756)	(3.754)
Constant	-0.77	-11.01***	115.07***
	(3.617)	(3.914)	(5.158)
Observations	1830	1660	2050
Adjusted R^2	0.611	0.709	0.588

Standard errors clustered at the district level shown in parentheses. *(p<0.10), **(p<0.05), ***(p<0.01). Models include state fixed effects. Controls not shown include percent of students who are gifted, percent of students who are black, percent of students who are Hispanic, percent of students eligible for free and reduced price lunch, urbanicity, school size, district size, and per pupil expenditure. Samples limited to schools containing between 1% and 99% of students in each DV group. Reported sample sizes rounded to the nearest 10 per NCES nondisclosure rules.

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Figure 1. Percent of Student Population in the Gifted Program, By Race and Year

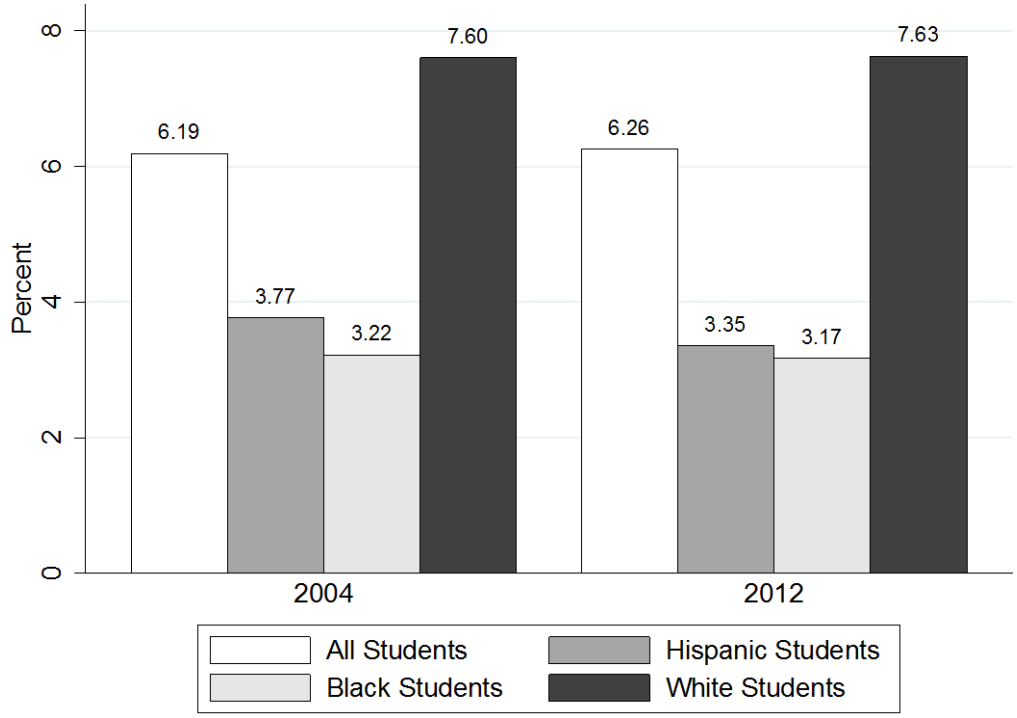

Figure 2. Predicted Percent of Gifted Students Who Are Hispanic by Percent of Teachers Who Are Hispanic, By Year

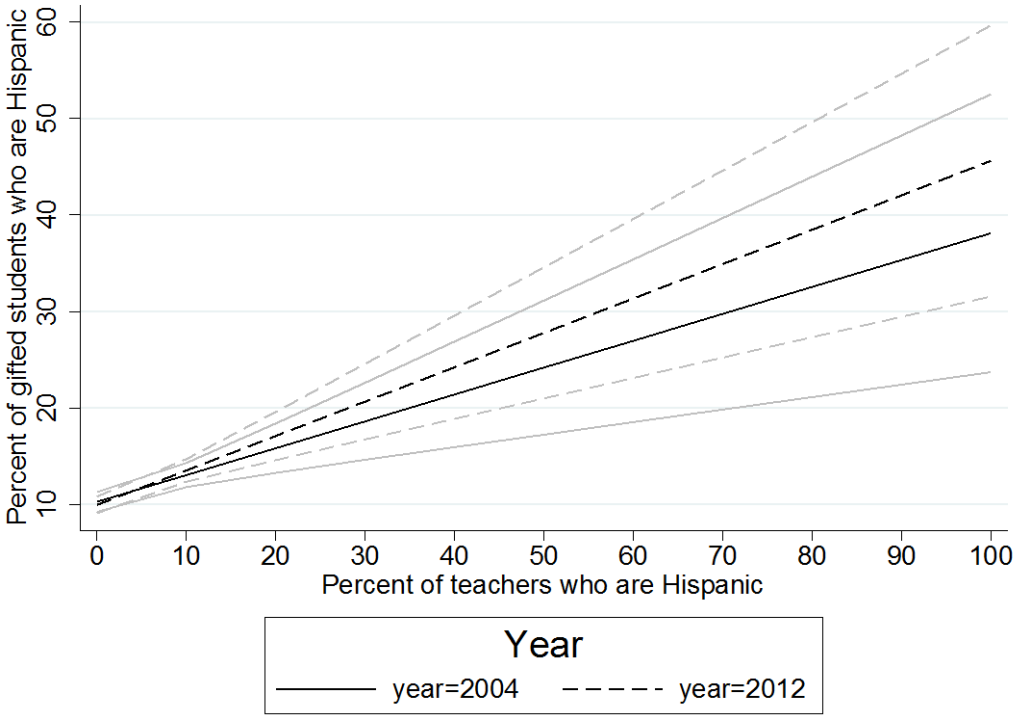

Figure 3. Predicted Percent of Gifted Students Who Are Black by Percent of Teachers Who Are Black, By Year

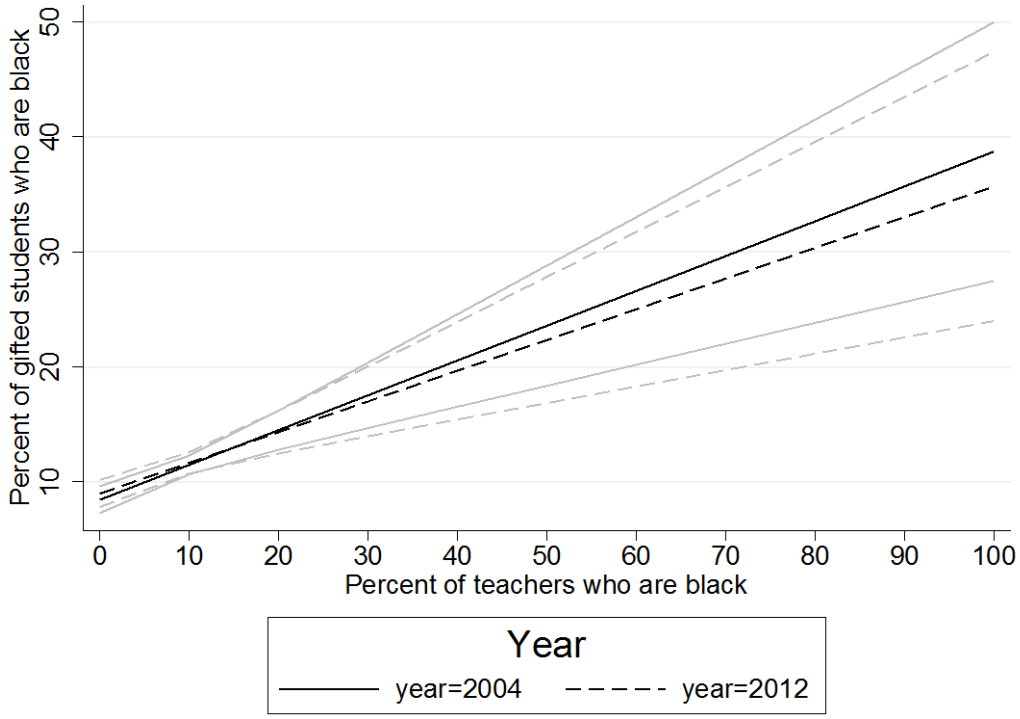

Figure 4. Critical Mass of Hispanic Teachers and Predicted Percent of Gifted Students Who Are Hispanic

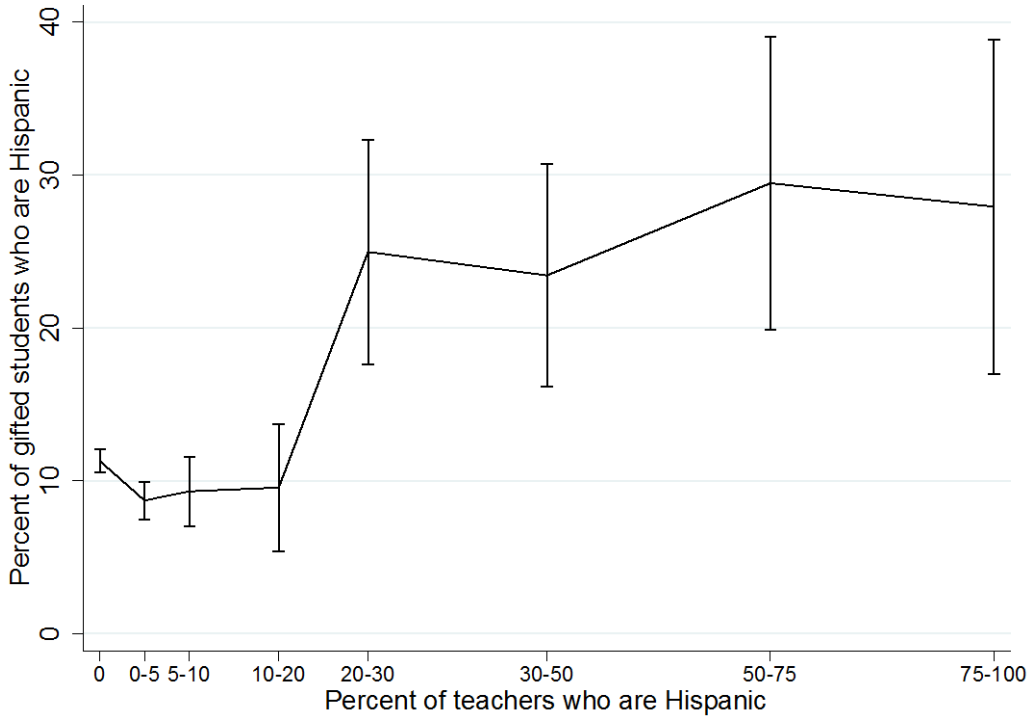

Figure 5. Critical Mass of Black Teachers and Predicted Percent of Gifted Students Who Are Black

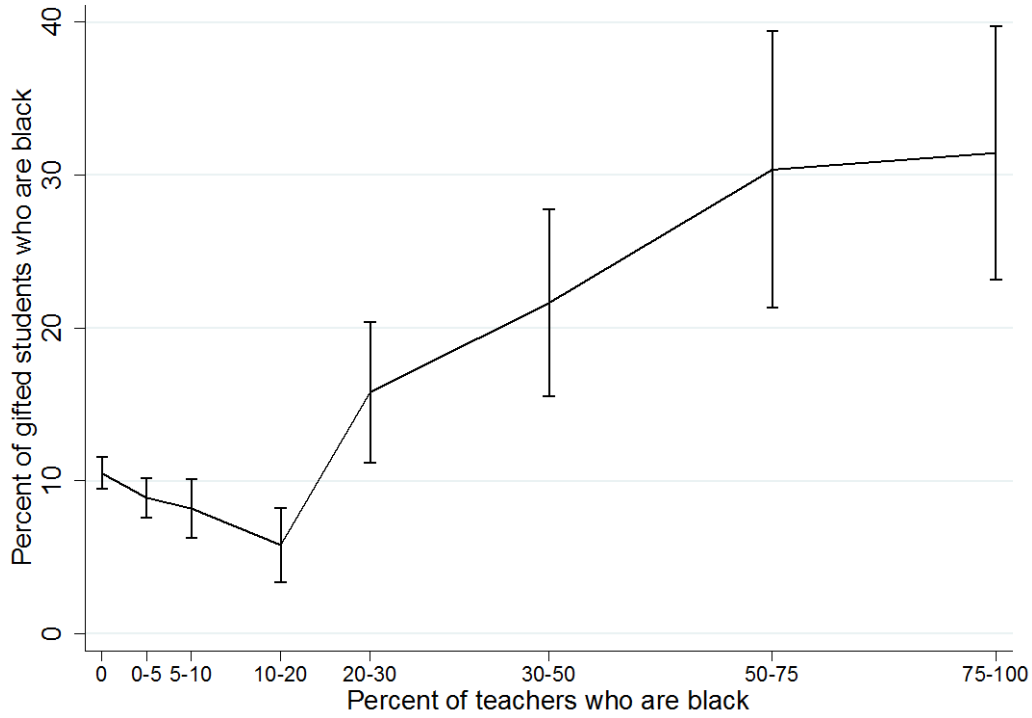

Figure 6. Hispanic Principals, Percent of Hispanic Teachers, and Predicted Percent of Gifted Students Who Are Hispanic

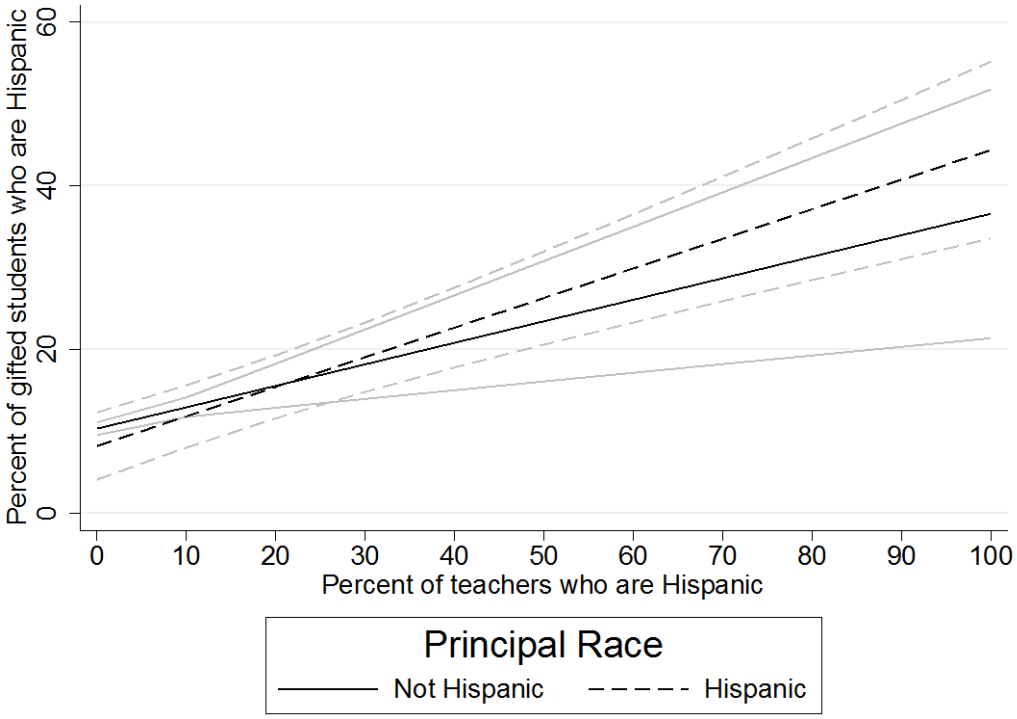

Figure 7. Black Principals, Percent of Black Teachers, and Predicted Percent of Gifted Students Who Are Black

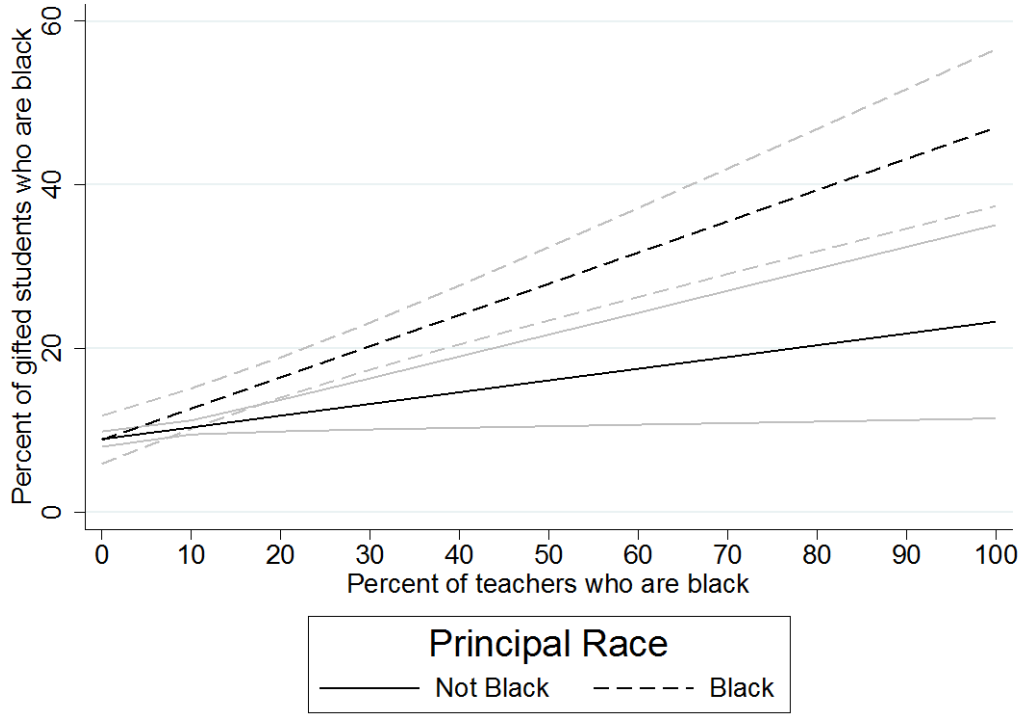

Table 1: Descriptive Statistics, Full Sample and By Year

	(1) Full Sample	(2) 2004 Sample	(3) 2012 Sample
Percent of students who are gifted	6.22	6.19	6.26
	(7.32)	(8.07)	(6.27)
Percent of gifted students who are Hispanic	10.09	9.59	10.72
	(21.29)	(21.32)	(21.24)
Percent of gifted students who are black	9.41	10.73	7.78***
	(21.39)	(23.36)	(18.56)
Percent of gifted students who are white	71.71	70.91	72.71
	(31.48)	(32.30)	(30.41)
Percent of teachers who are Hispanic	3.91	3.82	4.03
	(11.54)	(11.00)	(12.19)
Percent of teachers who are black	6.22	6.87	5.41**
	(14.94)	(15.82)	(13.74)
Percent of teachers who are white	87.76	86.75	89.03***
	(20.39)	(21.21)	(19.26)
Principal is Hispanic	0.05	0.05	0.05
	(0.21)	(0.21)	(0.21)
Principal is black	0.10	0.11	0.09
	(0.30)	(0.31)	(0.29)
Principal is white	0.88	0.87	0.89*
	(0.33)	(0.34)	(0.31)
Percent of students who are Hispanic	15.39	14.50	16.50**
	(22.24)	(22.41)	(21.98)
Percent of students who are black	14.49	16.20	12.37***
	(22.63)	(24.41)	(20.01)
Percent of students who are white	62.37	61.56	63.38
	(30.42)	(31.15)	(29.48)
Percent of students who are eligible for FRPL	48.01	46.02	50.49***
	(27.76)	(28.25)	(26.94)
Urbanicity			
City	0.27	0.33	0.20***
	(0.44)	(0.47)	(0.40)
Suburb	0.32	0.32	0.33
	(0.47)	(0.47)	(0.47)
Small Town	0.13	0.12	0.13
	(0.33)	(0.33)	(0.34)
Rural	0.28	0.23	0.33***
	(0.45)	(0.42)	(0.47)
School size	491.24	488.20	495.02
	(222.85)	(219.85)	(226.57)
District Size	29339.19	35328.03	21907.33***
	(72421.14)	(78063.65)	(64003.83)
Per Pupil Expenditure (in 2012 $1000)	11.15	10.85	11.53***
	(3.01)	(2.71)	(3.31)
Observations	2170	1200	970

Standard deviation in parentheses. Results from two-sided t-test shown: *(p<0.10), **(p<0.05), ***(p<0.01). Reported sample sizes rounded to the nearest 10 per NCES nondisclosure rules.

Table 2. Results from OLS Model Testing Race of Teachers, DV: Percent of Gifted

	Teacher Race/Ethnicity Only		
	(1) Hispanic Students	(2) Black Students	(3) White Students
Percent of teachers who are Hispanic	0.31***	0.01	-0.38***
	(0.059)	(0.034)	(0.065)
Percent of teachers who are black	0.07	0.32***	-0.30***
	(0.042)	(0.053)	(0.058)
Percent of students who are gifted	0.09***	0.04	-0.07
	(0.028)	(0.024)	(0.045)
Percent of students who are Hispanic	0.73***	-0.00	-0.56***
	(0.040)	(0.027)	(0.048)
Percent of students who are black	0.03	0.68***	-0.68***
	(0.035)	(0.043)	(0.043)
Percent of students who are eligible for FRPL	-0.00	0.03	-0.08***
	(0.019)	(0.017)	(0.026)
Suburb	-0.85	0.11	1.29
	(0.813)	(0.839)	(1.160)
Small Town	-3.21***	-0.87	4.27***
	(1.158)	(1.018)	(1.516)
Rural	-0.93	1.09	1.78
	(0.912)	(0.986)	(1.252)
School size (in 100s)	-0.04	-0.22	-0.23
	(0.162)	(0.156)	(0.202)
District Size (Logged)	-0.10	0.66*	-1.39***
	(0.313)	(0.376)	(0.473)
Per Pupil Expenditure (in 2012 $1000)	-0.07	0.15	-0.40*
	(0.120)	(0.147)	(0.206)
Year	0.01	0.04	-0.29***
	(0.076)	(0.078)	(0.101)
Constant	-11.55	-87.23	695.61***
	(153.490)	(157.138)	(202.581)
Observations	1830	1660	2050
Adjusted R^2	0.610	0.706	0.587

Standard errors clustered at the district level shown in parentheses. *(p<0.10), **(p<0.05), ***(p<0.01). Models include state fixed effects. Controls not shown include percent of students who are gifted, percent of students who are black, percent of students who are Hispanic, percent of students eligible for free and reduced price lunch, urbanicity, school size, district size, and per pupil expenditure. Samples limited to schools containing between 1% and 99% of students in each DV group. Reported sample sizes rounded to the nearest 10 per NCES nondisclosure rules.

Table 3: Results from OLS Model Testing Critical Mass Theory, DV: Percent of Gifted Students from Each Race Group

	(1) Hispanic Students	(2) Black Students	(3) White Students
Percent of teachers who are Hispanic			
>0% and ≤ 5%	-2.58***	0.61	0.51
	(0.689)	(0.717)	(1.070)
>5% and ≤ 10%	-1.99	0.79	-1.91
	(1.238)	(1.121)	(2.117)
>10% and ≤ 20%	-1.73	2.80	-5.65*
	(2.241)	(1.902)	(3.029)
>20% and ≤ 30%	13.66***	-0.30	-12.33***
	(3.877)	(2.701)	(4.247)
>30% and ≤ 50%	12.13***	1.37	-16.24***
	(3.847)	(2.079)	(4.681)
>50% and ≤75%	18.16***	-0.40	-23.05***
	(5.015)	(2.008)	(5.248)
>75% and ≤100%	16.62***	3.14	-25.16***
	(5.695)	(2.471)	(7.255)
Percent of teachers who are black			
>0% and ≤ 5%	1.84**	-1.60**	-1.71
	(0.840)	(0.718)	(1.209)
>5% and ≤ 10%	-0.81	-2.30*	0.29
	(1.193)	(1.175)	(1.771)
>10% and ≤ 20%	3.47**	-4.69***	-0.63
	(1.550)	(1.438)	(1.976)
>20% and ≤ 30%	2.54	5.29**	-6.45**
	(1.969)	(2.537)	(2.590)
>30% and ≤ 50%	4.39	11.14***	-13.57***
	(3.230)	(3.386)	(3.881)
>50% and ≤75%	1.97	19.84***	-18.25***
	(3.355)	(4.911)	(5.295)
>75% and ≤100%	4.89	20.94***	-20.67***
	(4.242)	(4.523)	(5.017)
Year = 2012	0.03	0.01	-0.29***
	(0.074)	(0.074)	(0.101)
Constant	-54.44	-26.75	693.35***
	(148.516)	(149.374)	(201.567)
Observations	1830	1660	2050
Adjusted R^2	0.620	0.716	0.586

Standard errors clustered at the district level shown in parentheses. *p<0.10, **p<0.05, ***p<0.01. Models include state fixed effects. Controls not shown include percent of students that are gifted, percent of students that are black, percent of students that are Hispanic, percent of students eligible for free and reduced price lunch, urbanicity, school size, district size, and per pupil expenditure. Samples limited to schools containing between 1 and 99 of students in each DV group. Reported sample sizes rounded to the nearest 10 per NCES nondisclosure rules.

Table 4. Results from OLS Model Including Principal and Teacher Race, DV: Percent of Gifted Students from Each Race Group

	Teacher and Principal			Teacher and Principal Interaction		
	(1) Hispanic Students	(2) Black Students	(3) White Students	(4) Hispanic Students	(5) Black Students	(6) White Students
Percent of teachers who are Hispanic	0.31***	-0.00	-0.38***	0.26***	0.02	-0.40***
	(0.061)	(0.034)	(0.067)	(0.080)	(0.038)	(0.083)
Percent of teachers who are black	0.07*	0.29***	-0.27***	0.11*	0.14**	-0.19**
	(0.045)	(0.054)	(0.060)	(0.062)	(0.064)	(0.076)
Principal is Hispanic	-0.20	1.10	0.06	-2.12	1.07	-0.76
	(2.120)	(1.123)	(2.368)	(2.190)	(1.270)	(2.682)
Principal is black	-0.98	3.76**	-2.78	-0.03	-0.08	-0.39
	(1.571)	(1.476)	(1.887)	(1.920)	(1.494)	(2.378)
Principal is Hispanic x % of teachers who are Hispanic				0.10	-0.01	0.05
				(0.083)	(0.038)	(0.099)
Principal is black x % of teachers who are black				-0.06	0.24***	-0.15*
				(0.059)	(0.062)	(0.086)
Year = 2012	0.01	0.03	-0.29***	0.01	0.03	-0.28***
	(0.076)	(0.077)	(0.101)	(0.076)	(0.077)	(0.102)
Constant	-14.93	-78.69	687.73***	-13.40	-76.06	684.15***
	(153.071)	(155.812)	(203.145)	(152.833)	(154.494)	(203.272)
Observations	1830	1660	2050	1830	1660	2050
Adjusted R^2	0.610	0.709	0.587	0.610	0.714	0.588

Standard errors clustered at the district level shown in parentheses. *(p<0.10), **(p<0.05), ***(p<0.01). Models include state fixed effects. Controls not shown include percent of students who are gifted, percent of students who are black, percent of students who are Hispanic, percent of students eligible for free and reduced price lunch, urbanicity, school size, district size, and per pupil expenditure. Samples limited to schools containing between 1% and 99% of students in each DV group. Reported sample sizes rounded to the nearest 10 per NCES nondisclosure rules.

Notes

1 Authors' calculations from the 2009-10 Civil Rights Data Collection, which can be accessed at http://ocrdata.ed.gov/StateNationalEstimations/Projections_2009_10.

2 Note that these percentages are not weighted by the number of students in the school and thus are not the same as the percentages in the gifted or total student population.

3 CCD uses locale codes as defined by the National Center for Education Statistics (NCES). In 2005 and 2006, NCES supported work by the Census Bureau to redesign the original locale codes in light of changes to the U.S. population and the definition of key geographic concepts. As a result, locale codes from a 8-value system to a more detailed 12-value system, with some schools designated to different levels of urbanicity across both locale code schemes. We chose to collapse locale codes across both waves into larger categories representing city, suburban, small town, and rural locales. Where possible, we use the 2004 locale codes for all schools within our sample and 2012 locale codes for schools that do not appear in the 2004 CCD, however, regression results are not sensitive to alternate methods of construction for our urbanicity control.

4 We interacted the year 2012 with both the teacher percentage (Hispanic and black) variables and the principal (Hispanic and black) variables to explore whether the relationship between percentage of teachers of a minority racial/ethnic group and percentage of gifted students who share the same racial/ethnic group remains relatively constant across the two years, controlling for district and school factors. The results for these separate regressions are shown in Table A.1 (teachers only with covariates) and Table A.2 (teachers and principals with covariates). We used an *F* test to examine the joint statistical significance of these interaction terms. The null hypothesis that all were 0 could generally not be rejected for either set of regressions at conventional levels (with the exception of the white student model that included both teacher and principal interactions, which was marginally significant ($p = .09$). Overall, these results point to little evidence that the associations we examine differ between 2004 and 2012 (see also Figures 2 and 3). Therefore, we chose to proceed with a pooled sample for our analyses and include year fixed effects in our main models.