The Effects of Principal-Teacher Demographic Matching on Teacher Turnover in North Carolina

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Abstract

A growing awareness of the influential role that teachers of color play for minority students has sparked interest in the efficacy of various strategies to improve the recruitment and retention of minority teachers. Given the already low representation of teachers of color in schools serving large proportions of Black and Latino students, understanding the correlates of teacher attrition is key to developing supportive education policies to minimize teacher departure in those schools serving at-risk populations. This study uses a linear probability model with school fixed effects to investigate the role of principal-teacher demographic matching in the likelihood of teacher turnover decisions. We find evidence that being race-matched with a principal leads to lower rates of teacher turnover. We find that these results are robust to controlling for the school's governance. Impacts are larger for teachers of color, compared to white teachers. Policy implications are discussed.

The Effects of Principal-Teacher Demographic Matching on Teacher Turnover in North Carolina

Teacher turnover has long been a challenge for K-12 public schools. Beyond the financial costs associated with advertising, recruiting, screening, interviewing, and hiring new candidates, and the investment of time and resources required at the school level to ensure new teachers are adequately trained on school policies and procedures and supported in their first year at a new school, research has demonstrated that teacher turnover has negative impacts on student achievement (Kraft, Marinell, & Yee, 2016; Ronfeldt, Loeb, & Wyckoff, 2013). Teacher turnover is particularly concerning in places where there is low representation of minority teachers to begin with, a challenge that has received renewed attention in recent years in light of a burgeoning body of new research that has revealed the benefits of teacher-student demographic congruence for minority students on a variety of student outcomes, including test scores (Dee, 2004, 2007; Egalite, Kisida, & Winters, 2015), school suspensions (Lindsay & Hart, 2017), academic perceptions and attitudes (Egalite & Kisida, 2018), student attendance (Holt & Gershenson, 2015), referrals for gifted and talented services (Nicholson-Crotty, Grissom, Nicholson-Crotty, & Redding, 2016), and even the likelihood of school dropout (Gershenson, Hart, Lindsay, & Papageorge, 2017).

There are two approaches available to policymakers seeking to diversify the teacher workforce. The first approach is focused on recruitment, which requires taking steps to make the existing applicant pool more representative by increasing the number of Black and Latino college students graduating with education degrees or pursuing alternative licensure. Research by Lindsay, Blom, and Tilsey (2017) demonstrate key exit points along the teaching pipeline, which constrains the number of teachers of color who ultimately end up in the classroom. For instance, almost all routes to teacher licensure require a bachelor's degree, yet there is an insufficient

number of college graduates of color. Only 21 percent of all Black adults and 16 percent of Latino adults have a college degree in any field, which is a constraint on the number of eligible adults for teaching licensure and certification.

Strategies currently being implemented to improve diversity in teacher recruitment include high school programs that provide a teacher preparation course of study, like the North Carolina Teacher Cadet Program; state-funded scholarships for minority teacher candidates, such as the Florida Fund for Minority Teachers; university outreach programs, such as the Brothers United in Leadership Development (BUILD) Academy at North Carolina State University; and alternative teacher certification programs, such as the New York City Teaching Fellows or the Washington D.C. Capital Teaching Residency.

The second approach to diversifying the teacher workforce focuses on supporting the existing pool of qualified teachers by taking steps to reduce turnover among Black and Latino teachers. Preserving the corps of high-quality teachers of color is a critical policy goal to maximize diversity in the teacher workforce. Unfortunately, national teacher survey data demonstrates that among those who have majored in education, teachers of color are more likely to report that they are not currently teaching relative to white teachers (Lindsay, 2017). This raises important questions about the in-school experiences of teachers of color, an area where research is sorely lacking. Why do retention statistics vary by teacher race, and what role do characteristics such as job responsibilities, teacher compensation, accountability pressures, curricular support, school environment, facilities, and resources play in making Black and Latino teachers more likely to leave the profession? These are questions into which research is only beginning to delve. Descriptive data from national teacher surveys offer a useful starting point—

when asked the reason for leaving a school or the teaching profession altogether, teachers of color point to "school factors" as the primary reason (Lindsay, 2017).

The present study uses rich administrative data from North Carolina to examine the role of principal diversity in the turnover decisions of teachers of color. Specially, we examine the effects of principal-teacher demographic matching on teacher retention in public elementary, middle, and high schools in the state of North Carolina. Our research questions are the following:

1) Are teachers who are racially matched to their principals more or less likely to turnover than average?

2) Is this relationship the same for novice teachers?

We proceed by first grounding this work in the relevant literature. Next, we describe our data and methods and present our results. We conclude with discussion of our findings and the policy implications.

Related Literature

Research analyzing the determinants of teacher turnover has examined the relative influence of student body characteristics, such as race, socioeconomic status, average achievement levels (Hanushek, Kain, & Rivkin, 2004); school contextual factors, such as the school facilities, leadership, the presence of induction and mentoring programs, student-teacher ratios, and general working conditions (Horng, 2009; Ladd, 2011; Loeb, Darling-Hammond, & Luczak, 2005; Smith & Ingersoll, 2004; Stinebrickner, 1998); teacher characteristics, such as race, age, gender, ability, whether or not they are married, and salary (Hanushek, Kain, & Rivkin, 2004; Imazeki, 2005; Podgursky, Monroe, & Watson, 2004; Stinebrickner, 1998), and a host of other factors. Three important takeaways stand out from this body of literature.

First, schools serving high proportions of economically disadvantaged and low-performing students appear to be especially vulnerable to high rates of teacher turnover (Hanushek, Kain, & Rivkin, 2004; Scafidi, Sjoquist, & Stinebrickner, 2007), which elevates the salience of examining this particular outcome as a means of addressing persistent achievement gaps.

Second, school working conditions appear to have some of the strongest effects on teacher turnover decisions (Johnson, Kraft, & Papay, 2012; Ladd, 2011), which points to a promising pathway to investigate strategies for ameliorating turnover rates. Further, research has shown that school principals are in a strong position to influence teachers' working conditions (Burkauser, 2017), underlining the importance of school leadership personnel for reducing teacher turnover. In particular, teachers' perception of the quality of school leadership is the dominant predictor of teacher turnover in North Carolina (Ladd, 2011).

Third, the effect of workplace conditions on teacher turnover decisions appears to be strongest for teachers of color working in schools in which their race/ethnicity is under-represented (Bednar & Gicheva, 2017) and for inexperienced teachers (Kukla-Acevedo, 2009). The findings for teacher of color are worrisome because of the overwhelming underrepresentation of teachers of color that already exists in U.S. public schools (Ingersoll & Merrill, 2017). Thus, the identification of any mitigating factors that reduce turnover rates among minority teachers could have significant policy implications for efforts to improve diversity in the teacher workforce. Inexperienced teacher turnover raises concerns because it points to the ways in which high rates of teacher turnover can exacerbate inequalities for historically underserved students, because it is often low-income, low-performing, and non-white students

who are more likely to be assigned the least qualified and least experienced teachers to begin with (Lankford, Loeb, & Wyckoff, 2002).

Although a limited body of research has examined the influence of supervisor demographic characteristics on teacher turnover decisions, this factor has never been examined in the context of a race and gender match between teacher and principal. For instance, Grissom, Nicholson-Crotty, and Keiser (2012) examine the role of supervisor gender for teacher satisfaction and turnover, finding that male teachers express lower job satisfaction and demonstrate a higher turnover propensity in schools led by a female principal. Grissom and Keiser (2011) investigate these issues with same-race teachers and principals, finding that teachers report higher job satisfaction and have lower turnover when supervised by a same-race principal.

In recent years, the question of how race congruence impacts teacher turnover has been analyzed by researchers through traditional measures, like job satisfaction (Olsen & Huang, 2019; Viano & Hunter, 2017), and newer measures, like labor market behaviors (Goff, Rodriguez-Escutia, & Yang, 2018) and teacher-principal trust (Brezicha & Fuller, 2019). With one exception, these studies use nationally representative survey data.

While both Olsen and Huang (2019) and Viano and Hunter (2017) examine the issue of job satisfaction and race congruence through School Administrator and Staffing Survey (SASS) data, their analytical approaches capture two different aspects of the same issue. The former finds that racially incongruent teacher-principal pairs lead to a decreased level of job satisfaction. They note that because Black principals (11% of respondents) and Black teachers (6% percent of respondents) made up a small proportion of the population, the most common racially incongruent pairing most likely existed between a white teacher and a Black principal. They

believe that this incongruence explained much of the lower levels of job satisfaction. However, because the data is not matched between teacher and principal, it is not certain that Black principal - white teacher incongruence was indeed the underlying relationship that lead to satisfaction differentials.

Viano and Hunter (2017) use similar SASS data from 2000-2012 to examine the impact of racial matching longitudinally and by U.S. region. They affirm Olsen and Huang's (2019) intuition that the difference in job satisfaction in racially incongruent pairs is primarily due to the dissatisfaction of white teachers working with Black principals, rather than Black teachers being more satisfied when working with Black principals. They also find that the impact of racial incongruity on job satisfaction has reduced over time and that the measured effect size for both Black-Black satisfaction and white-Black dissatisfaction is larger in the South than any other region in the U.S.

One factor that is known to influence teacher job satisfaction, and therefore teacher turnover, is trust between teachers and principals (Burkhauser, 2017). Brezicha and Fuller (2019) examine the effect of race congruence on teacher-principal trust using a large sample of principals and teachers in North Carolina. They find that race congruence led to significantly higher levels of trust at all levels of schooling and that the effect was greatest at the primary school level. While their research is not explicitly about teacher turnover, racial congruency's impact on teacher-principal trust would be expected to impact teacher turnover as well.

A different and more granular approach to analyzing racial congruence's impact on teacher turnover comes from Goff, Rodriguez-Escutia, and Yang (2018). They examine the effect of teacher-principal racial congruence by examining a number of labor market behaviors, like job searching, changing, and applying. They found that teachers are more likely to apply to

positions where they are the same race as the principal. They also found that teachers are less likely to seek a new position when working with a principal of the same race and that this is especially true of non-white teachers. However, their dataset combines Black and Latino respondents under a single 'minoritized' category, meaning that congruency sometimes represents Black-Latino and Latino-Black Principal-Teacher pairings. This likely means that their findings would likely represent a lower bound estimate for the actual values of completely congruent pairings.

The present study seeks to add the literature by using state administrative data on schools, teachers, and principals to investigate principal-teacher demographic matching on teacher turnover.

METHOD

Conceptual Framework

The theoretical framework underlying this research tests the assumption that demographic congruence between a teacher and principal can lead to better communication in the workplace and can increase the opportunity for supervisor and employee to share a common background, culture, and values. Interpersonal relationships between principals and their teachers influence teachers' attitudes, which help to define the broader school climate (Price, 2012). The paths through which improved outcomes may be observed might be direct or indirect. For instance, improved representation of minority teachers in education leadership positions may have a direct effect on teacher retention by manifesting itself as mentorship and advocacy for a given teacher on the part of the school principal. It may also have an indirect effect; for example, when a supervisor's leadership style is appealing to an employee, resulting in higher workplace satisfaction, more ambitious goal-setting, and lower turnover.

Data

This study uses statewide administrative data from North Carolina to examine the influence of teacher-principal demographic congruence on teacher turnover. North Carolina offers a robust administrative dataset where teachers can be matched to principals and schools via the state's personnel and pay files. The pay files include information from every pay period of the year, so we use Pay Period 3 (i.e., September) as a snapshot of the employee's status for the year. We use the data as provided through the North Carolina Education Research Data Center (NCERDC). Because the NCERDC data contain linked data over several years, we can exploit within-school changes in the race of the principal over time. The racial categories are also taken from the self-reported administrative categories in the data. In North Carolina, these categories are "Asian", "Black", "Hispanic [Latino]"," "Other", "Indian [Native American]", and "White", and they are recorded as mutually exclusive categories. In these analyses, we use occupational definitions as established by the North Carolina Department of Instruction:

Principal: A principal is designated by a local board of education as the head of a school. To receive state funding for a principal, a school must have 100 or more students in average daily membership (ADM) and/or seven or more full-time state paid teachers (or the equivalent). A principal must hold a principal's license ('P,' 'AP,' or 'DP,' licensure area 00012). There are no provisional licenses allowed for principals.

Teacher: A teacher is designated to carry out the duties and responsibilities of the instructional process in the school and holds a license appropriate to the area of assignment.

Outcome

Turnover is defined as changing schools at least once over the course of school years 2015-16 to 2017-18. Using the snapshot of the teaching workforce as described above, if a teacher changed schools, they are recorded as having "turnover". Therefore, the outcome

variable is a dichotomous variable with a value of 1 for teachers who change schools at least once. Here it should be noted that we cannot observe the reason for the turnover – just whether a change has occurred.

Controls

These administrative data come with an extensive set of controls related to teachers and schools. We include years of teacher experience, level of education, school type (e.g., traditional, magnet, etc.), Title 1 status, teacher gender, and charter status. Teacher characteristics are taken from administrative personnel files. School characteristics are provided annually via the State's School Report Card data.

Model

The key independent variable of interest is demographic congruence between a teacher and principal, testing the relationship between being race or gender matched and teacher's turnover behavior. Formally, a linear probability model is employed:

$$Y_{tsr} = \beta_0 + \beta_1 Same_t + \beta_2 X_t + \beta_3 Z_r + \alpha_s + \varepsilon_{tsr}$$

Where Y is a binary turnover indicator for teacher, *t*, in school, *s,* and *Same* is a vector of demographic match variables indicating a gender or race mismatch between teacher and principal. In terms of control variables, X is a vector of teacher controls, and Z is a vector of school characteristics, and α is a school fixed effect. Finally, ε is a stochastic error term, clustered at the school level. The model is estimated at all levels. β_1 is the coefficient of interest.

The key to our identification strategy is a school fixed effect, which ensures we are only comparing teachers within the same school. Also of note is that the dependent variable, Y, is calculated from the administrative data by comparing the school in which a given teacher was teaching at time, *t*, to the school at which they were teaching at *t* + 1. Employing the school fixed

effect does not resolve all problems of omitted variables bias; things that are unobserved and that change over time may be confounding variables. We conduct all analyses on the analytic sample of full-time teachers, and then a subsample of teachers who are working at schools with Black/non-white principals. We run the models doing two comparisons- a comparison of Black and white teachers and the subset of Black principals, and then a comparison of non-white (which includes Black, Latino, Indian [Native American], and other teachers. In these data, 96% of the educator workforce (leaders and teachers) has reported their race as white (80.72%) or Black (15.11%). The next largest category is Latino teachers (1.90%).

RESULTS

Teacher Characteristics and Teacher Turnover in North Carolina:

We first present descriptive statistics for our sample, which includes ~285,000 teacher-person years. On average, teachers have 13.45 years of experience and 46% of teachers work in a Title I school. In the Black teacher subsample, teachers have about 13.79 years of experience and 57% are teaching in a Title I school.

In terms of teacher turnover, 40% of teachers change schools at least one time over the course of the 3 school years included in the study. Consistent with national data, there are higher rates of teacher turnover for all teachers of color compared to white teachers. Teachers with more experience are less likely to turnover, and those with masters and doctoral degrees are more likely to change jobs. As compared to alternative schools, teachers at other types of schools are less likely to turnover. Finally, teachers who are working at Title 1 schools change jobs most frequently.

With regard to teacher-principal race matching, most teachers (70%) are race-matched

and gender-matched. Sixty percent of Black teachers in the sample are matched to a Black

principal. This is also consistent with the existing literature on hiring and sorting patterns.

Table 1. Descriptive Statistics

Variable	N	Mean	Std. Dev.
Teacher Experience (Years)	310,340	13.51	9.029692
School Enrollment	106,056	531.86	325.7853
Percentage Black Principals	289,732	22.50%	.4175633
Percentage URM Principals	289,732	25.86%	.4378857
Percentage Black Teachers	318,258	12.76%	.3336033
Percentage URM Teachers	318,258	18.67%	.3891656
Percentage Title I Teachers	318,258	58.58%	.4925817
Percent Novice Teachers	318,258	14.93%	.3563909
Percent Ever Turnover	318,258	40.70%	.4912792

Model Results

Table 2 presents the findings of the race match effects on teacher turnover for Black

teachers in the data. These are linear probability models that include a variety of controls for

teacher and time-varying school characteristics, as well as a school fixed effect. Column 4

presents the findings from our preferred model, which controls for teacher and school

characteristics, as well as school fixed effects. We find evidence that racial congruence between teachers and principals leads to lower teacher turnover. Specifically, when the full set of controls is included, and the school fixed effect is employed, Black teachers are 4.27% more likely to turnover in general, but are 1.05% less likely to change schools over the course of the observed time period when they are matched to a Black principal. The control variables all move in the expected directions. The inclusion of the school fixed effect compares teachers who are in the same school and experience variation in the race of the principal. There is no relationship between gender congruence and teacher turnover.

Table 2. Black Match

	(1) Turnover at Least Once	(2) Turnover at Least Once	(3) Turnover at Least Once	(4) Turnover at Least Once
Black Teacher Matched to Black Principal	-0.0565*	-0.0561*	-0.0105	-0.0105
	(0.00903)	(0.00902)	(0.00651)	(0.00651)
Black	0.228*	0.228*	0.0427*	0.0427*
	(0.00623)	(0.00623)	(0.00391)	(0.00391)
Gender	-0.00576	-0.00543	0.00401	0.00401
	(0.00382)	(0.00382)	(0.00260)	(0.00260)
Education Level	0.0452*	0.0453*	0.0119*	0.0119*
	(0.00165)	(0.00165)	(0.00104)	(0.00104)
Teacher Experience	-0.00204*	-0.00205*	0.000332*	0.000332*
	(0.000169)	(0.000169)	(0.000113)	(0.000113)
Title 1 School	-0.0271*	-0.0271*	-0.0333	-0.0331
	(0.00313)	(0.00313)	(0.0368)	(0.0368)
School Type	-0.0473*	-0.0490*	-0.0522+	-0.0523+
	(0.00277)	(0.00278)	(0.0293)	(0.0293)
Charter		0.0824*		0.00939
		(0.00754)		(0.0745)
Constant	1.742*	1.744*	1.803*	1.802*
	(0.0124)	(0.0124)	(0.115)	(0.115)
Observations	289464	289464	289464	289464

Standard errors in parentheses
$^+ p < 0.10$, $^* p < 0.05$

Table 3 presents the findings of race match effects for teacher turnover for non-white teachers in the data. These models account for any Latino, Native American, Black, Asian, or

other race teacher who is matched to any non-white principal. There are limited numbers of non-Black non-white teachers and principals in the larger sample. Similar to models in Table 2, these are linear probability models. Here again, Column 4 is the preferred model. Though there is a statistically significant relationship in the initial models, we do not find a significant relationship in this specification, once the full set of controls and school fixed effects are included.

Table 3. URM Match

	(1) Turnover at Least Once	(2) Turnover at Least Once	(3) Turnover at Least Once	(4) Turnover at Least Once
Any TOC Matched to Any POC	-0.0165* (0.00740)	-0.0170* (0.00740)	0.00248 (0.00570)	0.00248 (0.00570)
URM	0.173* (0.00516)	0.173* (0.00516)	0.0201* (0.00329)	0.0201* (0.00329)
Gender	-0.00618 (0.00382)	-0.00585 (0.00382)	0.00372 (0.00260)	0.00372 (0.00260)
Education Level	0.0453* (0.00165)	0.0454* (0.00165)	0.0121* (0.00104)	0.0121* (0.00104)
Teacher Experience	-0.00178* (0.000170)	-0.00180* (0.000170)	0.000376* (0.000113)	0.000376* (0.000113)
Title 1 School	-0.0276* (0.00313)	-0.0275* (0.00313)	-0.0333 (0.0368)	-0.0331 (0.0368)
School Type	-0.0477* (0.00278)	-0.0494* (0.00278)	-0.0523+ (0.0293)	-0.0524+ (0.0293)
Charter		0.0831* (0.00753)		0.0108 (0.0745)
Constant	1.735* (0.0125)	1.738* (0.0125)	1.803* (0.115)	1.803* (0.115)
Observations	289464	289464	289464	289464

Standard errors in parentheses
$^+ p < 0.10, ^* p < 0.05$

We turn next to the sample of novice teachers, where the impact of racial congruence between teachers and principals is no longer statistically significant (Table 4). Black novice teachers—defined as those teachers who are within the first 3 years of their career—are statistically significantly more likely to turnover in general (9.8%), but there is no reduction in turnover when they are matched to a Black principal. These models include approximately

47,000 person-year observations and the control variables continue to move in the expected

direction.

Table 4. Black Match, Novice teachers

	(1)	(2)	(3)	(4)
	Turnover at Least Once	Turnover at Least Once	Turnover at Least Once	Turnover at Least Once
Black Teacher Matched	-0.000596	0.000440	-0.0127	-0.0127
to Black Principal	(0.0179)	(0.0179)	(0.0163)	(0.0163)
Black	0.0982*	0.0983*	0.0139	0.0139
	(0.0129)	(0.0130)	(0.0106)	(0.0106)
Gender	-0.0272*	-0.0271*	-0.0136*	-0.0136*
	(0.00797)	(0.00796)	(0.00671)	(0.00671)
Education Level	0.0474*	0.0476*	0.00722*	0.00722*
	(0.00471)	(0.00470)	(0.00352)	(0.00352)
Teacher Experience	0.157*	0.157*	0.137*	0.137*
	(0.00341)	(0.00341)	(0.00278)	(0.00278)
Title 1 School	-0.0158*	-0.0153*	-0.0473	-0.0358
	(0.00688)	(0.00688)	(0.108)	(0.110)
School Type	-0.0521*	-0.0539*	-0.0856	-0.0862
	(0.00613)	(0.00614)	(0.0580)	(0.0580)
charter		0.0907*		-0.158
		(0.0165)		(0.257)
Constant	1.381*	1.384*	1.619*	1.621*
	(0.0277)	(0.0277)	(0.227)	(0.227)
Observations	47380	47380	47380	47380

Standard errors in parentheses
$^+ p < 0.10,\ ^* p < 0.05$

Table 5 repeats this exercise and finds similar results for non-white novice-teachers.

Table 5. URM Match, Novice teachers

	(1) Turnover at Least Once	(2) Turnover at Least Once	(3) Turnover at Least Once	(4) Turnover at Least Once
Any TOC Matched to	0.0557*	0.0558*	0.000240	0.000222
Any POC	(0.0140)	(0.0140)	(0.0138)	(0.0138)
URM	0.0407*	0.0412*	-0.0134	-0.0134
	(0.0101)	(0.0101)	(0.00847)	(0.00847)
Gender	-0.0268*	-0.0268*	-0.0136*	-0.0136*
	(0.00797)	(0.00796)	(0.00671)	(0.00671)
Education Level	0.0482*	0.0483*	0.00762*	0.00762*
	(0.00471)	(0.00471)	(0.00352)	(0.00352)
Teacher Experience	0.157*	0.157*	0.136*	0.136*
	(0.00341)	(0.00341)	(0.00279)	(0.00279)
Title 1 School	-0.0158*	-0.0154*	-0.0459	-0.0342
	(0.00688)	(0.00688)	(0.108)	(0.110)
School Type	-0.0531*	-0.0549*	-0.0860	-0.0865
	(0.00615)	(0.00616)	(0.0580)	(0.0580)
Charter		0.0906*		-0.160
		(0.0165)		(0.257)
Constant	1.384*	1.386*	1.625*	1.627*
	(0.0278)	(0.0278)	(0.227)	(0.227)
Observations	47380	47380	47380	47380

Standard errors in parentheses
$^+ p < 0.10$, $^* p < 0.05$

Tables 6 and 7 use the same models for experienced teachers. Experienced Black teachers are 6.07% more likely to turnover than other teachers, but this turnover rate is reduced by 3.18% in the full model (Column 4). Experienced non-white teachers are 4.27% more likely to turnover over than white teachers, and this rate is reduced by 1.95% when they are matched to any non-white teacher.

Table 6. Black Match, Experienced teachers

	(1) Turnover at Least Once	(2) Turnover at Least Once	(3) Turnover at Least Once	(4) Turnover at Least Once
Black Teacher Matched to Black Principal	-0.0662*	-0.0659*	-0.0318*	-0.0318*
	(0.00960)	(0.00959)	(0.00640)	(0.00640)
Black	0.261*	0.261*	0.0607*	0.0607*
	(0.00606)	(0.00606)	(0.00364)	(0.00364)
Gender	0.0177*	0.0180*	0.0243*	0.0243*
	(0.00402)	(0.00402)	(0.00261)	(0.00261)
Education Level	0.0442*	0.0443*	0.0170*	0.0170*
	(0.00168)	(0.00168)	(0.00103)	(0.00103)
Teacher Experience	-0.00643*	-0.00644*	-0.00362*	-0.00362*
	(0.000197)	(0.000197)	(0.000125)	(0.000125)
Title 1 School	-0.0271*	-0.0271*	-0.0347	-0.0319
	(0.00333)	(0.00333)	(0.0372)	(0.0373)
School Type	-0.0467*	-0.0482*	-0.00255	-0.00380
	(0.00295)	(0.00295)	(0.0328)	(0.0328)
charter		0.0753*		0.108
		(0.00803)		(0.0712)
Constant	1.803*	1.805*	1.666*	1.664*
	(0.0133)	(0.0133)	(0.129)	(0.129)
Observations	262397	262397	262397	262397

Standard errors in parentheses
$^+ p < 0.10,$ $^* p < 0.05$

Table 7. URM Match, Experienced teachers

	(1) Turnover at Least Once	(2) Turnover at Least Once	(3) Turnover at Least Once	(4) Turnover at Least Once
Any TOC Matched to	-0.0374*	-0.0379*	-0.0195*	-0.0195*
Any POC	(0.00806)	(0.00806)	(0.00565)	(0.00565)
URM	0.215*	0.216*	0.0427*	0.0427*
	(0.00524)	(0.00524)	(0.00317)	(0.00317)
Gender	0.0179*	0.0182*	0.0242*	0.0242*
	(0.00403)	(0.00402)	(0.00261)	(0.00261)
Education Level	0.0448*	0.0448*	0.0173*	0.0173*
	(0.00168)	(0.00168)	(0.00103)	(0.00103)
Teacher Experience	-0.00614*	-0.00615*	-0.00355*	-0.00355*
	(0.000197)	(0.000197)	(0.000125)	(0.000125)
Title 1 School	-0.0276*	-0.0276*	-0.0339	-0.0311
	(0.00333)	(0.00333)	(0.0372)	(0.0373)
School Type	-0.0467*	-0.0482*	-0.00225	-0.00353
	(0.00295)	(0.00295)	(0.0328)	(0.0328)
Charter		0.0762*		0.110
		(0.00802)		(0.0712)
Constant	1.792*	1.794*	1.663*	1.661*
	(0.0134)	(0.0134)	(0.129)	(0.129)
Observations	262397	262397	262397	262397

Standard errors in parentheses
$^+$ $p < 0.10$, * $p < 0.05$

DISCUSSION

Using linear probability models and the inclusion of school fixed effects, we find evidence that being race-matched to a school principal is associated with lower teacher turnover for Black teachers, and in some instance for all teachers of color (this includes all categories included in the data (Black, Latino, Indian [Native American], Asian, and Other)). This relationship holds when controlling for whether a school is a charter school or not. We do not observe similar patterns for gender congruent matches. These estimates are robust to inclusion of several key school characteristics, including Title 1 status, charter status, and teacher characteristics (experience and education).

Dividing the teacher data in subsamples of novice and experienced teachers, we find that the reductions in turnover are driven mainly by the retention of experienced Black teachers when they are matched to a Black principal. Our study defines an experienced teacher as one who has served more than three years either in or out of the state. Given the existing literature on high-needs and hard-to-staff schools where Black principals and teachers are more likely to be employed, this is an extremely interesting and policy relevant finding. National data indicates that Black teachers are more likely to exit that classroom than their white counterparts.

Why do we observe race-matching benefits? There are several potential explanations. For example, racially-congruent principals might be more likely to establish systems and implement programs that take teachers of colors' values and attitudes into consideration. Furthermore, they might be more likely to recognize barriers and advocate directly for the needs of teachers of color, thus reducing the likelihood of race-based discrimination. By establishing cooperative and supportive relationships with teachers of color, principals of color may reduce workplace stress, improve communication channels, and motivate teachers to remain engaged in the work.

CONCLUSION

Investigating the causes and consequences of teacher turnover is highly relevant for ensuring high-needs schools retain these important educational resources. We study the role of principals of color in improving the retention of teachers of color. Using a linear probability model with school fixed effects, we find that having a Black principal ameliorates turnover for Black teachers.

As North Carolina, other states, and education stakeholders grapple with creating and maintaining a high-quality diverse teaching workforce, understanding the factors related to turnover and retention are important. This work seeks to document some interesting patterns.

Although these relationships are robust to particular school characteristics, the mechanisms through which these patterns are established need to be investigated further. More research on the turnover patterns of teachers of color is needed to build more understanding about this segment of the teacher labor market.

Evidence from North Carolina and New York City reveals that workplace support from school administration is critically important for reducing turnover. Teacher ratings of the school environment change depending on which principal is leading the school, an effect that is independent of other factors that might influence their perceptions of the school environment, such as school resources or the composition of the student body. In fact, support from school administrators is one of the most important factors in predicting which teachers stay, and it is especially important for minority teachers in schools that have few teachers of color to begin with.

Given their influential role in reducing turnover, what specific strategies are available to school leaders to improve retention among teachers of color? Principals can consult with teachers of color to learn what administrative practices foster a supportive work environment. This might include efforts to promote inclusivity, building a culture that does not tolerate race-based stereotypes, and promoting passive representation by diversifying the school leadership team to better reflect the racial composition of the entire community. At a minimum, this sends a signal to families about how much the education system values inclusiveness and how power is distributed among the various racial groups represented in a school.

Furthermore, teachers of color need viable pathways that allow them to enter leadership positions fully prepared. Research has shown that teachers of color—and, in particular, male teachers of color—risk being pigeonholed into certain types of leadership positions that offer no

career advancement in the long run. Existing school leaders must provide appropriate opportunities for advancement across all staff, and not depend on teachers of color to serve primarily as "deans of culture" or language translators.

Teacher turnover and shortages are challenges that the entire education field faces, but these challenges are especially acute for teachers of color. School leaders can be the missing critical link to creating the working conditions that attract, retain, and develop teachers of color. Policymakers should examine the conditions under which school leaders can create these environments.

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