

# Teacher Race and Racial Disparities in Special Education

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## Abstract

The U.S. teacher population is predominantly White, yet research has not yet determined how teacher race might matter to the identification of students with disabilities. This study examines the role of teacher racial composition in special education service receipt. Findings show that schools' proportion of teachers of color, net of all other factors, is associated with students' increased odds of receiving special education services for all categories of disability, with the exception of emotional disturbance and autism spectrum disorder. These findings may reflect higher expectations of students held by teachers of color, which may lead to greater special education receipt for students who are not performing as well as expected. Although the effects do not vary by student race for most categories of disability, the evidence presented here suggests that increased representation of teachers of color ameliorates some underrepresentation of students of color in special education.

## Keywords

diversity, school(s), teacher(s)

The teacher population across the United States, in both general and special education positions, is predominantly White, yet nearly half of all U.S. students with disabilities are students of color (Billingsley, Bettini, & Williams, 2017). Researchers and advocates have long noted that teacher populations do not match the racial composition of the student population, arguing for initiatives to diversify the teacher workforce (King & Darling-Hamond, 2018; Villegas & Irvine, 2010). Indeed, research suggests such diversification might be beneficial for students (Villegas & Irvine, 2010), consistently suggesting that increased proportions of teachers of color are beneficial for all students—particularly for students of color (Bates & Glick, 2013; Cherng, 2017; Dee, 2004; Gershenson, Holt, & Papageorge, 2016; J. Irizarry & Donaldson, 2012).

Although research has examined the relationship between a variety of outcomes and teacher race, it has not provided a clear answer on how teacher race relates to the identification of students with disabilities or to the distribution of special education services. This is a particularly glaring gap, given racially disparate incidences of special education receipt are clear from federal data (U.S. Department of Education, 2015) and that a major debate in special education research focuses on whether and how race matters for students' receipt of special education services (Coutinho, Oswald, & Best, 2002; Morgan & Farkas, 2016; Morgan et al., 2017; Skiba, Artiles, Kozleski, Losen, & Harry, 2016; Skiba, Poloni-Staudinger, Gallini, Simmons,

& Feggins-Azziz, 2006). A growing body of research has focused on the role of school context, and particularly on the racial context of the school, in shaping students' odds of special education receipt and in explaining the racial disparities in special education (Bal, Betters-Bubon, & Fish, 2017; Eitle, 2002; Fish, 2018; Hibel, Farkas, & Morgan, 2010; Shifrer, 2018; Sullivan & Bal, 2013). Teacher race may be an important component of the school racial context for special education, potentially affecting both (a) special education rates for all students, regardless of race and (b) special education rates for students of color, who may experience effects through bureaucratic representation of teachers of color on staff and also through student-teacher race matching. In this study, I examine the role of teacher racial composition in students' odds of receiving special education services using a cross-sectional, multilevel analysis of Wisconsin public school data.

## Research Questions

**Research Question 1:** How does teacher racial composition shape students' odds of special education receipt?

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**Research Question 2:** How does teacher racial composition differentially shape the odds of receipt for students of different racial backgrounds?

## The Role of Teacher Race in Special Education Receipt

Research suggests teacher race might matter for students' disability identification and special education receipt through a variety of pathways discussed in this section.

### Universal Effects of Teacher Race

One potential pathway for teacher race to affect students' odds of special education receipt is through variation in teacher practices, perspectives of students, and effects on student outcomes that *vary* by teacher race but are universal by student race. The literature generally indicates that all students, regardless of race, benefit from having teachers of color (Bates & Glick, 2013; Cherng & Halpin, 2016; J. Irizarry & Donaldson, 2012; Y. Irizarry, 2015; Pigott & Cowen, 2000). Teachers of color tend to maintain more positive perceptions of students than White teachers do, rating students as having fewer behavior problems and higher levels of skills (Bates & Glick, 2013; Y. Irizarry, 2015; Pigott & Cowen, 2000). This may reduce special education rates in schools with more teachers of color as teachers' perceptions of academic performance and behavior affect their propensity to refer children for special education prereferral and testing processes.

Research also shows that teachers of color may have different approaches to teaching than White teachers: In contrast to the dominant narrative of White teachers' decision to enter teaching due to positive schooling experiences, people of color tend to enter teaching to combat the negative experiences they had in schools (J. Irizarry & Donaldson, 2012). These teachers may be uniquely suited to support students who are struggling in school, perhaps preventing special education placements. Finally, students may rate teachers of color more favorably than White teachers (Cherng & Halpin, 2016), suggesting students have positive educational experiences with teachers of color; this may support children's academic and behavioral skills in ways that prevent some need for special education services.

One important caveat in these theorized effects is that teachers of color might select into schools with lower rates of special education receipt. Teachers of color are more likely to be assigned to teach lower-achieving students (Kalogrides, Loeb, & Bêteille, 2013), and schools with lower average achievement are generally less likely to place students in special education (Fish, 2018; Hibell et al., 2010). A second important caveat, regarding the direction of the effects on special education receipt, is that

I assume more effective teachers would also be likely to reduce special education receipt. This presumably occurs through improved support for students in ways that reduce the need for special education or through perceptions of students as higher performers that other teachers might see as needing interventions. Yet teachers of color tend to hold more positive conceptualizations of their students (Bates & Glick, 2013; Y. Irizarry, 2015; Pigott & Cowen, 2000) and tend to be uniquely focused on improving the educational experiences of marginalized students (J. Irizarry & Donaldson, 2012). These characteristics may increase their likelihood of referring struggling students to prereferral and testing, which may lead to higher rates of special education qualification. Indeed, their more positive evaluations of students (Bates & Glick, 2013; Y. Irizarry, 2015; Pigott & Cowen, 2000) may mean that they see higher potential and thus greater need for services among struggling students.

With the exception of the caveats discussed above, the research on a variety of outcomes suggests that having more teachers of color is supportive for child outcomes. Yet to the best of my knowledge, only two studies have directly examined the relationship between teacher racial composition and special education receipt; neither found any evidence of an association between these factors (Bal et al., 2017; Sullivan & Bal, 2013). However, in the former study, the data only come from a single school district, and in the latter, the authors only estimated effects for one disability category (emotional disturbance), leaving open the question of whether there might be effects for other disability categories and in a broader sample. Thus, my hypothesis arises from the conceptual and empirical framework discussed above, in which a greater proportion of teachers of color likely reduces student struggles that can lead to the need for special education services and also improves teachers' perceptions of student skills and behaviors. I propose the *Teacher Race Hypothesis: Students in schools with higher proportions of teachers of color will have reduced odds of special education receipt.*

### Variation in Teacher Race Effects by Student Race

In addition to the universal effects discussed above, a rich body of literature indicates teacher race matters differently by student race, generally showing positive outcomes for children of color when they are taught by teachers of color. Students with teachers of the same race have higher levels of math and reading achievement (Banerjee, 2017; Dee, 2004; Egalite, Kisida, & Winters, 2015), as well as improved emotional-behavioral outcomes (Wright, Gottfried, & Le, 2017). When schools have more teachers of color, students of color experience lower rates of disciplinary referrals (Meier & Stewart, 1992) and higher rates of representation

in gifted programs (Grissom, Rodriguez, & Kern, 2017; Rocha & Hawes, 2009). Despite the research suggesting student–teacher racial match matters for student outcomes, only a handful have examined the outcome of special education receipt. The one study that does examine the interaction between student and teacher race as well as potential confounders (Hibel et al., 2010) finds no effects. However, this article had sufficient sample size only for a subset of disability category outcomes and racial groups.

Scholars suggest a variety of potential pathways for how child outcomes might be affected by the interaction between teacher and child race, including racial bias, differential teacher effectiveness, and representative bureaucracy.

**Racial bias.** One possible pathway for heterogeneous effects of teacher race by student race is via racial bias in special education referrals. Although referrals to interventions and disability testing do not necessarily lead to service receipt, the majority of teacher referrals are qualified as disabilities (Harry & Klingner, 2006), making this one potential pathway for teacher effects. Teacher referrals to special education testing processes are affected by racial bias (Fish, 2017) in directions that parallel findings of higher teacher expectations (and thus higher rates of referrals when children fail to meet those expectations) for White and Asian students than of Black and Latinx students (Cherng, 2017; Downey & Pribesh, 2004; Gershenson et al., 2016; McKown & Weinstein, 2008; Tenenbaum & Ruck, 2007; van den Bergh, Denessen, Hornstra, Voeten, & Holland, 2010) and more negative perceptions of misbehavior when exhibited by students of color (Downey & Pribesh, 2004; A. Ferguson, 2001; Tenenbaum & Ruck, 2007). These biases likely arise from a combination of factors: statistical discrimination rooted in well-documented racial achievement gaps (R. Ferguson, 2003), stereotypes of higher ability and better behavior among White and Asian students (A. Ferguson, 2001; Morris, 2005), and differential value assigned to students’ “cultural ethos” in the classroom (Neal, McCray, Webb-Johnson, & Bridgest, 2003; Rowley et al., 2014; Tyler et al., 2006) and to teacher’s biased interpretations of intentionality and motivation (A. Ferguson, 2001; Suarez-Orozco, Suárez-Orozco, & Todorova, 2008). Yet racial bias is moderated when students have teachers of the same race as themselves (Cherng, 2017; Dee, 2005; Downey & Pribesh, 2004; Fox, 2016; Gershenson et al., 2016; Pigott & Cowen, 2000).

**Teacher effectiveness.** Improved outcomes for children of color taught by teachers of color may also be due to increases in teacher effectiveness when the student’s and teacher’s race match. Scholars argue same-race teachers provide role models of the student’s race (Dee, 2004; Villegas & Irvine, 2010), reduce stereotype threat (Dee, 2004), improve student engagement, and support students in

navigating racism (Villegas & Irvine, 2010). Teachers of color are particularly motivated to reduce inequalities experienced by students of color (J. Irizarry & Donaldson, 2012), likely improving the academic and behavioral outcomes of students of color. For White teachers, racial mismatch with students can lower levels of job satisfaction (Renzulli, Parrott, & Beattie, 2011), potentially hampering their effectiveness as teachers. Finally, Black students rate Black teachers more highly than other teachers across multiple measures, including building relationships and explaining course material, suggesting that for Black students in particular, same-race teachers are beneficial (Cherng & Halpin, 2016).

**Representative bureaucracy.** Bureaucratic representation in schools, in which teachers and other educational staff share demographic characteristics with the student population, might improve student outcomes by distributing resources more equitably, increasing sensitivity to needs that vary by race, advocating for policies that reduce disparities, and increasing help-seeking by students (Grissom, Kern, & Rodriguez, 2015). Indeed, representative bureaucracy is associated with lower rates of disciplinary referrals (Meier & Stewart, 1992) and of special education placement for children of color (Meier, 1984; Rocha & Hawes, 2009) and higher rates of gifted education for children of color (Grissom et al., 2017).

All three of the potential mechanisms discussed above predict the second hypothesis, the *Student–Teacher Match Hypothesis: Students of color attending schools with more teachers of color will experience lower odds of special education receipt*. Because decisions to place children in special education arise from referral processes, interventions, testing, and diagnosis involving multiple educators and because the data available in this study do not allow for the identification of the initiator of the referral, I focus on the racial composition of the teachers at the school rather than the match of a student with a particular teacher. Thus, the hypothesis here is most congruent with teacher composition effects such as bureaucratic representation but also reflects cumulative effects of exposures to same-race teachers within a school.

Yet, just like in the *teacher race hypothesis*, it is also possible that increased proportions of teachers of color may actually increase the odds of students of color receiving special education services. For instance, in the presumed mechanism of teachers’ racial bias, it is possible that teachers of color might be less likely to underrefer children of color to prereferral and testing for academic challenges (Fish, 2017) than White teachers, reflecting higher expectations of students of color (again, with the caveat that referrals do not necessarily lead to service receipt). Furthermore, for both the mechanisms of teacher effectiveness and representative bureaucracy, it is possible that the improved

supports for students of color actually increase referrals and subsequent receipt of special education services as struggling students receive the help they need in schools with more teachers of color.

## Method

### Data

I use a data set from the Wisconsin Department of Public Instruction that includes all students in all Wisconsin public schools in 2010–2011, excluding only students without test scores, discussed below. Students in Wisconsin face notable racial inequalities in education, specifically in special education (Vanneman, Hamilton, Anderson, & Rahman, 2009). The state includes schools in rural, suburban, and urban districts, and it faces chronic staffing shortages in special education across the state (Wisconsin Department of Public Instruction, 2016). The focal data set has significant advantages, most importantly a very large size of 429,009 students in 2,040 schools, which allows for estimation of categories excluded in previous research on predictors of special education receipt.

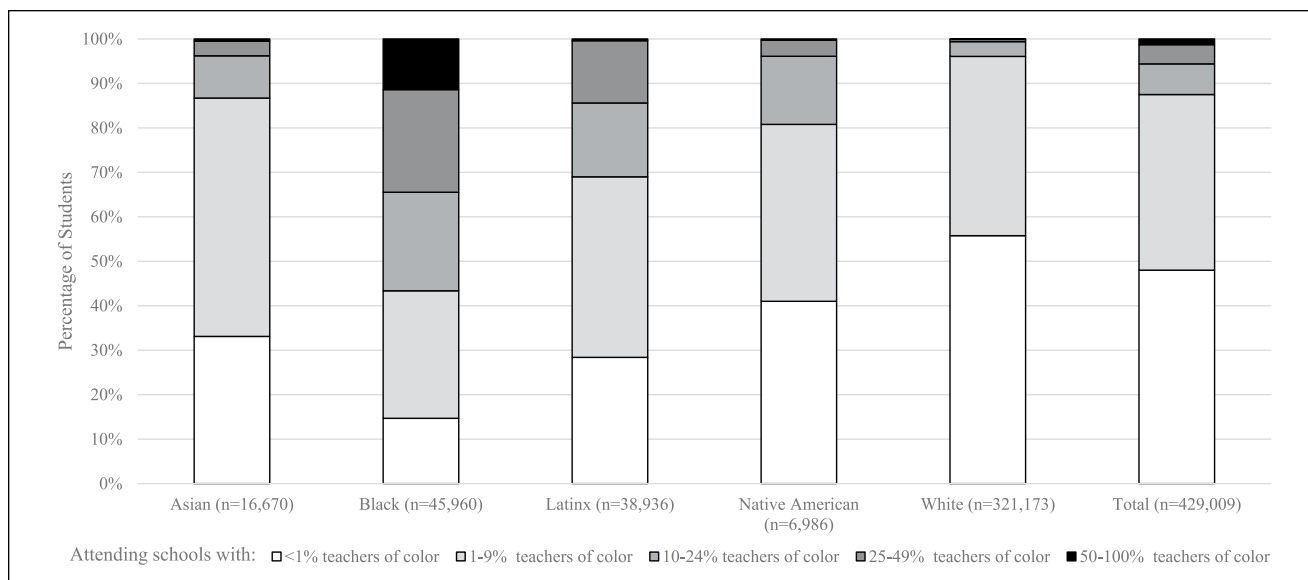
The dependent variables in this study include whether a student received special education services under any disability category in the 2010–2011 school year, as well as the set of higher incidence disability categories recognized as more subjectively diagnosed (Connor, 2005; Donovan & Cross, 2002), thus more subject to social factors such as school context: autism spectrum disorder, emotional disturbance, intellectual disability, other health impairment, specific learning disability, and speech-language impairment. These are all dichotomous variables indicating receipt or lack of receipt of services. Table 1 displays descriptive statistics for these outcomes.

The student-level independent variables include all available student measures thought to predict special education receipt. This includes race as reported by parents (only a single category is recorded for each student), represented by dichotomous measures for Asian, Black, Latinx, Native American, and White, as well as English language learner (ELL) status (Hibel & Jasper, 2012), included as a dichotomous variable. Socioeconomic status is included via free/reduced lunch (FRL) status. I include grade level, ranging from 3 to 10, as these are the only grade levels in which students took academic proficiency tests. Gender, included as a dichotomous measure with female as the base category, is associated with special education receipt (Coutinho et al., 2002). I include attendance because it is associated with student performance and thus special education receipt. The variable is measured as percent of days attended, is grand mean centered, and ranges from  $-94.5$  to  $5.5$ . I include student mobility through a dichotomous variable of whether the student transferred schools in the last academic year. I include academic performance as two categorical variables, math and

**Table 1.** Descriptive Statistics.

Variables	M	SD
Student level, $N = 429,009$		
Male	0.513	0.500
Asian	0.039	0.193
Black	0.107	0.309
Latinx	0.091	0.287
Native American	0.016	0.126
English language learner (ELL)	0.076	0.264
Free and reduced lunch (FRL)	0.397	0.489
Attendance (mean centered)	0.884	5.844
Transferred in the last year	0.028	0.166
Reading proficiency level	3.230	0.840
Math proficiency level	3.015	0.964
Disability status		
Any disability	0.145	0.352
Autism spectrum disorder	0.010	0.101
Emotional disorder	0.017	0.131
Intellectual disability	0.011	0.105
Other health impairment	0.026	0.159
Specific learning disability	0.054	0.226
Speech language impairment	0.022	0.146
School level, $N = 2,040$		
Proportion White	0.756	0.264
Proportion English language learner	0.063	0.097
Proportion free and reduced lunch	0.411	0.235
Average attendance (mean centered)	0.000	0.059
Proportion transferred in last year	0.049	0.100
Average reading proficiency level	3.174	0.378
Average math proficiency level	2.935	0.443
Proportion teachers of color	0.044	0.108
Proportion Asian teachers	0.007	0.020
Proportion Black teachers	0.024	0.084
Proportion Latinx teachers	0.015	0.047
Proportion Native American teachers	0.003	0.013
Proportion White teachers	0.950	0.106
Proportion teachers with master's degree	0.514	0.193
Proportion teachers with 5 or more years of experience	0.831	0.120
Proportion bilingual teachers	0.006	0.032

reading proficiency levels, which range from 1 to 4 (1 = *minimal performance*, 2 = *basic*, 3 = *proficient*, and 4 = *advanced*). Prekindergarten students and students in Grades 2, 9, 11, and 12 did not receive scores through the Wisconsin Student Assessment System at the time of data collection. Thus, I exclude these students from analyses. Among the students in grade levels with test scores, only 2.50% of all students are missing test scores. Among students with disabilities, this missingness ranges from 2.48% for autism spectrum disorder to 6.22% for emotional disorder. Some students with severe deficits in cognitive functioning, adaptive behavior, and academic functioning are eligible to take an alternative test in lieu of the standardized tests, thus the small numbers of



**Figure 1.** Distribution of students across schools with varying teacher racial compositions, by race.

missing data represent students with the most severe impairments. I exclude these cases via listwise deletion, perhaps producing more conservative estimates.

The school-level independent variable of interest is the proportion of teachers of color. Like many states, the teacher workforce in Wisconsin is overwhelmingly White (U.S. Department of Education, 2016). The distribution of students by race across schools with different proportions of teachers of color can be seen in Figure 1. Because of the low numbers of teachers of color, it was necessary to collapse the teacher race data into the binary of White teachers and teachers of color. This aggregation is unlikely to substantively affect the outcomes of interest: Representation of teachers of color—across racial groups—is associated with similar reductions in racial discrimination as representation of co-ethnic teachers (Rocha & Hawes, 2009). Disaggregating the teachers of color, the mean school percentage of Asian teachers is 0.6%, Black teachers is 2.1%, Latinx teachers is 1.1%, and Native American teachers is 0.3%.

I also include school-level controls that are thought to predict special education receipt. The proportion of White students in the school is particularly important to include as a control, as children of color with disabilities are more likely to be taught by teachers of color (Billingsley et al., 2017), and research suggests the odds of special education receipt varies by school racial composition (Fish, 2018; Hibel et al., 2010). ELL status and ELL programming available in schools are also associated with special education receipt (Artiles, Rueda, Salazar, & Higuera, 2005; Hibel & Jasper, 2012), so I include school proportion ELL as a control. Proportion FRL and school mean academic proficiency are also included as they are associated with special education receipt (Fish, 2018; Hibel et al., 2010). I also include

average attendance and the proportion of students that transferred in the last year as these may reflect the level of stability at the school and may affect special education qualification processes. Although research suggests teacher qualifications and measurable skills are not associated with special education receipt (Bal et al., 2017), I include the proportion of teachers with master's degree and the proportion of bilingual teachers as these have the potential to explain effects of teacher race.

### *Analytic Method*

I estimate the odds of special education receipt overall and the odds of receipt under each disability category through mixed-effects logistic regression models using the Stata command `xtnlogit` (Moehring & Schmidt-Catran, 2013), which account for the nested nature of the student-level data within school-level data and allow estimation of the binary outcomes, with a reference category of “no disability” in each analysis. I use cross-level interactions between student race and the school's teacher racial composition to test for racial matching effects between the student and the teacher racial composition. The interaction between the student race and the school racial composition is also included as a control as this could confound the relationship between student-teacher population match and odds of special education receipt.

### **Results**

Results are presented in Table 2 as coefficients and also as exponentiated coefficients for more intuitive interpretation of logistic regression results. The exponentiated coefficients are baseline odds for constants, odds ratios for

**Table 2.** Logistic Regression Models Predicting Special Education Receipt.

	Any disability		Other health impairment		Autism		Speech/language impairment	
	coef	exp(coef)	coef	exp(coef)	coef	exp(coef)	coef	exp(coef)
<b>Student level</b>								
Constant	-1.844	0.158***	-4.105	0.016***	-4.777	0.008***	-1.795	0.166***
Male	0.781	2.184***	0.924	2.519***	1.763	5.832***	0.667	1.948***
Asian	-1.335	0.263***	-3.047	0.048***	-1.287	0.276*	-0.834	0.434**
Black	-1.125	0.325***	-1.023	0.360***	-2.193	0.112***	-0.950	0.387***
Latinx	-0.898	0.407***	-1.250	0.286***	-1.500	0.223***	-0.400	0.670*
Native American	-0.876	0.416***	-2.122	0.120***	-1.020	0.361†	-0.909	0.403*
ELL	-0.832	0.435***	-1.227	0.293***	-1.577	0.207***	-0.295	0.744***
FRL	0.383	1.467***	0.239	1.270***	-0.103	0.902**	0.148	1.160***
Grade level	-0.001	0.999	0.064	1.066***	-0.043	0.958***	-0.292	0.747***
Attendance	-0.015	0.985***	-0.019	0.982***	-0.001	0.999	0.009	1.009***
Transferred in last year	-0.158	0.854***	-0.217	0.805***	-0.454	0.635***	-0.319	0.727***
Math proficiency level 2	-0.521	0.594***	-0.682	0.506***	-0.438	0.645***	-0.221	0.802***
Math proficiency level 3	-1.145	0.318***	-1.470	0.230***	-1.026	0.358***	-0.535	0.586***
Math proficiency level 4	-1.495	0.224***	-2.153	0.116***	-1.214	0.297***	-0.768	0.464***
Reading proficiency level 2	-0.997	0.369***	-1.013	0.363***	-1.000	0.368***	-0.440	0.644***
Reading proficiency level 3	-2.102	0.122***	-1.948	0.143***	-2.093	0.123***	-1.191	0.304***
Reading proficiency level 4	-2.927	0.054***	-2.725	0.066***	-2.627	0.072***	-1.837	0.159***
<b>School level</b>								
Proportion White	-1.067	0.344***	-2.539	0.079***	-1.676	0.187***	-1.600	0.202***
Proportion ELL	-0.722	0.486***	-2.110	0.121***	0.028	1.029	-0.979	0.376***
Proportion FRL	0.462	1.587***	0.305	1.356*	0.111	1.118	0.032	1.032
Average attendance	0.024	1.024***	0.023	1.023**	0.014	1.014	-0.009	0.991
Proportion transferred in last year	0.312	1.367	0.273	1.314	0.503	1.653	0.669	1.952
Mean math proficiency level	0.763	2.144***	1.067	2.907***	0.719	2.053***	0.491	1.634**
Mean reading proficiency level	0.252	1.287*	0.377	1.457†	0.462	1.587†	0.282	1.325
Proportion teachers of color	0.908	2.479***	1.123	3.073**	-0.266	0.766	1.633	5.120***
Proportion teachers with master's degree	-0.035	0.965	0.026	1.026	-0.187	0.830	-0.450	0.637***
Proportion bilingual teachers	-0.250	0.779	1.014	2.758	0.217	1.242	-0.625	0.535
<b>Student-school interactions</b>								
Asian × proportion White	1.295	3.651***	2.985	19.777***	1.510	4.525*	1.225	3.405***
Black × proportion White	1.231	3.425***	1.006	2.735***	1.451	4.269***	0.941	2.563***
Latinx × proportion White	0.900	2.461***	1.158	3.184***	1.542	4.676***	0.393	1.482†
Native American × proportion White	1.195	3.304***	2.424	11.290***	1.056	2.874	1.337	3.806**
Asian × proportion teachers of color	-0.577	0.561	2.424	11.290***	0.513	1.670	-1.307	0.271
Black × proportion teachers of color	-0.136	0.873	2.286	9.840*	0.224	1.251	-0.645	0.525
Latinx × proportion teachers of color	-0.080	0.923	-0.229	0.796	-1.066	0.344	-1.559	0.210**
Native American × proportion teachers of color	0.055	1.057	0.884	2.420	-0.872	0.418	-0.239	0.787
<hr/>								
	Any disability		Emotional Disturbance		Intellectual Disability		Specific Learning Disability	
	coef	exp(coef)	coef	exp(coef)	coef	exp(coef)	coef	exp(coef)
<b>Student school</b>								
Constant	-1.844	0.158***	-4.992	0.007***	-2.602	0.074***	-5.912	0.003***
Male	0.781	2.184***	1.352	3.866***	0.257	1.292***	0.492	1.636***
Asian	-1.335	0.263***	-2.656	0.070**	-0.912	0.402*	-0.662	0.516*
Black	-1.125	0.325***	-1.057	0.347***	-0.788	0.455***	-0.932	0.394***
Latinx	-0.898	0.407***	-1.235	0.291***	-1.108	0.330***	-0.604	0.547***
Native American	-0.876	0.416***	0.082	1.085	-0.637	0.529	-1.060	0.346***
ELL	-0.832	0.435***	-1.819	0.162***	-1.073	0.342***	-0.801	0.449***
FRL	0.383	1.467***	0.971	2.640***	0.734	2.084***	0.328	1.388***
Grade level	-0.001	0.999	0.069	1.071***	0.046	1.047***	0.099	1.105***

(continued)

Table 2. (continued)

	Any disability		Other health impairment		Autism		Speech/language impairment	
	coef	exp(coef)	coef	exp(coef)	coef	exp(coef)	coef	exp(coef)
Attendance	-0.015	0.985***	-0.040	0.961***	-0.012	0.988***	0.004	1.004**
Transferred in last year	-0.158	0.854***	0.413	1.511***	-0.207	0.813**	-0.417	0.659***
Math proficiency level 2	-0.521	0.594***	-0.584	0.558***	-0.371	0.690***	-0.626	0.535***
Math proficiency level 3	-1.145	0.318***	-1.138	0.321***	-0.621	0.538***	-1.367	0.255***
Math proficiency level 4	-1.495	0.224***	-1.588	0.204***	-0.120	0.887 <sup>†</sup>	-2.012	0.134***
Reading proficiency level 2	-0.997	0.369***	-0.808	0.446***	-1.555	0.211***	-1.169	0.311***
Reading proficiency level 3	-2.102	0.122***	-1.352	0.259***	-3.086	0.046***	-2.617	0.073***
Reading proficiency level 4	-2.927	0.054***	-1.910	0.148***	-3.370	0.034***	-4.229	0.015***
School level								
Proportion White	-1.067	0.344***	-0.075	0.928	-0.054	0.948	-0.367	0.693*
Proportion ELL	-0.722	0.486***	0.362	1.436	-0.258	0.772	-0.213	0.808
Proportion FRL	0.462	1.587***	0.268	1.307 <sup>†</sup>	0.758	2.134***	1.128	3.090***
Average attendance	0.024	1.024***	0.057	1.058***	0.045	1.046***	0.009	1.009
Proportion transferred in last year	0.312	1.367	1.417	4.125***	-1.183	0.306*	-0.195	0.822
Mean math proficiency level	0.763	2.144***	0.705	2.024***	0.220	1.246	1.182	3.260***
Mean reading proficiency level	0.252	1.287*	-0.272	0.762	-0.233	0.792	0.607	1.835***
Proportion teachers of color	0.908	2.479***	-0.550	0.577	1.349	3.855*	0.761	2.141*
Proportion teachers with master's degree	-0.035	0.965	0.346	1.413**	0.123	1.131	-0.013	0.987
Proportion bilingual teachers	-0.250	0.779	0.360	1.433	-0.605	0.546	-0.935	0.393
Student-school interactions								
Asian × proportion White	1.295	3.651***	2.023	7.563*	0.866	2.379	0.237	1.268
Black × proportion White	1.231	3.425***	1.609	4.997***	1.166	3.208***	0.679	1.972***
Latinx × proportion White	0.900	2.461***	1.196	3.306***	1.343	3.830***	0.527	1.694**
Native American × proportion White	1.195	3.304***	0.347	1.415	0.647	1.911	1.244	3.469***
Asian × proportion teachers of color	-0.577	0.561	2.044	7.721	0.590	1.804	-3.043	0.048**
Black × proportion teachers of color	-0.136	0.873	1.143	3.136 <sup>†</sup>	-0.255	0.775	0.104	1.110
Latinx × proportion teachers of color	-0.080	0.923	0.101	1.106	0.336	1.399	0.642	1.901
Native American × proportion teachers of color	0.055	1.057	0.838	2.311	-3.271	0.038	1.618	5.044

Note. ELL = English language learner; FRL = free and reduced lunch; coef = coefficient; exp(coef) = exponentiated coefficient.

<sup>†</sup>p < .10. \*p < .05. \*\*p < .01. \*\*\*p < .001.

individual and school-level covariates, and ratios of odds ratios for interactions.

### Main Effects of Teacher Racial Composition

The “main effects” of the proportion teachers of color in the model refer to the effect of teacher racial composition on the model for White students. These estimates indicate that for White students, attending a school with more teachers of color significantly increases the odds of special education receipt for any disability (the aggregate of all disability categories), other health impairment, speech-language impairment, intellectual disability, and specific learning disability. The estimates show the proportion of teachers of color has no relationship with White students' odds of special education receipt for autism or emotional disturbance.

### Interactions Between Teacher Racial Composition and Student Race

The interactions between proportion teachers of color and student race suggest that for most of the outcomes, the positive association between proportion teachers of color and odds of special education receipt holds universally by student race. Exceptions include Black and Asian students identified with other health impairment, Latinx students identified with speech-language impairment, Asian students identified with specific learning disability, and although just above the cutoff used here for statistical significance, the estimates for Black students with emotional disturbance are suggestive of a race interaction.

Interpretation of these interactions requires discussion of the main effects of race on the model, the main effects of

proportion teachers of color on the model (i.e., the estimate for White students), and the interaction effects on the model.

For the outcome of other health impairment, looking just to the main effects of race on the model, Asian and Black students have lower odds than White students of receiving special education. Next, examining the main effects of proportion teachers of color on the model, White students have increased odds as the proportion of teachers of color increases in the school. Looking to the interaction of Asian and Black by proportion of teachers of color, we can see Asian and Black students have an even greater increase in odds of other health impairment than their White peers when they attend schools with more teachers of color. This suggests attending a school with more teachers of color moderates the negative main race effects these groups experience, reducing this racial inequality.

For the outcome of specific learning disability, Asian students have lower odds than their White peers of receiving special education. An increase in the proportion of teachers of color increases the odds that White students receive special education. Looking to the interaction of Asian students with proportion of teachers of color, in contrast to the rest of their peers, Asian students experience decreasing odds as the proportion of teachers of color increases. In fact, the coefficient for the interaction is larger than the main effect of proportion of teachers of color, suggesting these students, who already experience lower odds of special education by race, experience even lower odds when they have more teachers of color.

For the outcome of speech/language impairment, Latinx students (along with their peers of color) have lower odds than White students of receiving special education services. Increases in proportion teachers of color on the model are associated with increases in White students' odds of special education receipt. The interaction estimates show that although most students of color experience similar increases as the White students when the proportion teachers of color increases, Latinx students experience no such increase with the change in the teacher population.

Finally, for the outcome of emotional disturbance, Black students have lower odds of receiving special education than their White peers. Unlike most of the outcomes, White students experience no change in odds of receiving special education for emotional disturbance when the proportion of teachers of color increases. For Black students, although just above the cutoff for statistical significance used in this study, the direction and magnitude of the estimate suggests these students experience an increase in odds of special education receipt as the proportion of teachers of color increases.

## Discussion

In sum, the results suggest a higher proportion of teachers of color in a school is associated with increased odds of

special education receipt for all students in the school, regardless of student race. This finding is in the opposite direction predicted by the *teacher race hypothesis*. Overwhelmingly, the results are homogeneous across student racial groups, also suggesting little support for the *student-teacher match hypothesis*. Exceptions include interaction estimates suggesting higher proportions of teachers of color increase the odds of special education receipt for Black and Asian students with other health impairment, and perhaps for Black students with emotional disturbance. It also appears that Latinx students experience little to none of the increase in odds of special education their peers experience when the proportion of teachers of color increases. These exceptions to the overall pattern are also inconsistent with the *student-teacher match hypothesis* as they generally indicate higher chances of special education receipt for students of color when they have teachers of color. As the effects are not explained as suggested by the hypotheses discussed above, nor do they match the expected directions suggested by previous research, I suggest some possible explanations below.

### Universal Effects of Teacher Race

The findings suggest that for most disability categories across most racial groups, schools with more teachers of color may have different practices around special education placement than those with fewer teachers of color, once factors such as the school's racial composition, school average socioeconomic status, and school average achievement levels have been taken into account. Although these findings contradict the stated hypothesis of the universal effects of teacher race on special education receipt, they are in line with the possibility, discussed above, that teachers of color might support better student outcomes by referring struggling students that would otherwise simply flounder. Indeed, teachers of color tend to hold higher academic expectations and evaluate student skills more positively than White teachers do (Y. Irizarry, 2015; Pigott & Cowen, 2000). Thus, it is possible that schools with more teachers of color are more likely to identify children with special education needs because they might be more likely to perceive low performance as a problem to remedy via intervention rather than as the norm.

The exceptions to these universal effects, autism and emotional disturbance, may shed additional light on the mechanisms behind the estimates. Unlike most of the outcomes, there is no relationship between the proportion of teachers of color and the odds of special education receipt for these two disability categories, both of which often present with behavioral challenges. Research shows that schools with more teachers of color have lower rates of disciplinary referrals for children of color (Meier, 1984; Meier & Stewart, 1992) and also that teachers of color perceive



unexpected behavior as less problematic than White teachers (Bates & Glick, 2013). Thus, the anomalous results for emotional disturbance and autism may reflect some resistance to referrals and special education service receipt for behavioral issues among educators of color.

### *Variation in Effects by Student Race*

White students experience the most consistent increases in special education receipt from increases in the proportion of teachers of color, with positive main effect estimates for all categories of disability excepting autism and emotional disturbance. Note the main effects of student race demonstrate that White students also experience higher odds of special education receipt than their comparable peers of color. Thus, having more teachers of color only increases their already higher odds of special education. It is possible that White students are more likely to be suspected of disability and therefore referred and qualified for services due to teachers' higher expectations of these students (Fish, 2017; Gershenson et al., 2016; Tenenbaum & Ruck, 2007) as referrals are based, in part, on teacher perceptions of the student struggling in comparison to expectations of that student (Gerber & Semmel, 1984). Increases in the proportion of teachers of color may, counterintuitively, exacerbate this disparity as racial distinction, or standing out racially in the school, may enhance racial bias, making academic challenges even more likely to be perceived as disability when they are presented by White students (Fish, 2018).

For students of color, then, the main effects of student race show that they are less likely than their White peers to receive special education services, once demographic and academic factors have been controlled. This may suggest in line with existing research on bias in teachers' expectations of students (Gershenson et al., 2016; Tenenbaum & Ruck, 2007) that they are being held to lower expectations than their White peers and are therefore generally less likely than White students to be referred for special education testing (Fish, 2017). This may suggest that when students of color experience academic challenges, their struggles are accepted as normal rather than treated as a problem in need of services.

If the racial disparities by student race are interpreted as I have above, the findings presented here suggest teachers of color may help remediate the disparities in access to special education services. For the disability category of other health impairment, increases in the proportion of teachers of color are associated with significantly increased odds of special education receipt for Black and Asian children, with similar direction of effects for Black children in the outcome of emotional disturbance. Similarly, Latinx students experience a decrease in odds of special education for speech/language impairment when they have more teachers of color, which may suggest that they are more likely to

receive interventions through English as a second language service (Hibel & Jasper, 2012).

The findings suggest Native American students experience no differential effects of teacher racial composition than their White peers, which may be a statistical artifact of their low representation or may mean their odds are unaffected by the teacher racial compositions present in their schools. Also less clear in meaning are effects for Asian students with specific learning disability. These students have lower odds overall, and having more teachers of color appears to exacerbate this disparity. Asian students may exhibit lower need for services, exacerbated by representation of teachers of color. Yet, it is also possible that Asian students are stereotyped as higher achieving and thus their challenges are not noticed and that increased representation of teachers of color exacerbates this disparity.

### *Limitations*

It is possible that the selection of teachers of color into schools may drive these results; although the models used here sought to take such issues into account by controlling for school characteristics, the available measures of school average socioeconomic status and average achievement levels are undeniably blunt. Thus, there is a potential for unmeasured differences in school disadvantage that might be associated with special education receipt.

Another important limitation to this study is the measure of teacher race. The available measure of teacher race, the proportion of non-White teachers in the school, provides a good measure of representative bureaucracy and addresses the problem of attributing the disability identification decision to a single teacher. Yet with this school-wide measure of teacher race, it is not possible to determine the distribution of students to teachers. It is possible that a student might attend a school with 20% teachers of color, for instance, and never have a classroom teacher of color. In addition, as is discussed in the "Method" section, all teachers of color are aggregated into one category. Although research suggests the aggregated category is sufficient to capture the associations of interest (Rocha & Hawes, 2009), the models may be missing heterogeneity that could be revealed by a more nuanced measure of teacher race. Thus, the findings are exploratory, suggesting the need for future research that can better identify the relationship between teacher race, student-teacher racial match, and special education receipt.

This study is also limited by the data set, which is cross-sectional and includes only a single state, again highlighting the exploratory nature of the findings. The findings present a single, descriptive snapshot of patterns in Wisconsin. An analysis of states with different policy contexts and demographic characteristics may have different results.

## Recommendations for Practice and Research

The fundamental challenge in interpreting the results in this study is that it is merely descriptive of patterns of special education receipt. I can only theorize as to whether higher odds of special education in schools with higher representation of teachers of color are indicative of better support for struggling students or whether the higher odds mean students in these schools are experiencing worse outcomes prior to disability identification. Existing research on teacher race and student outcomes suggests the former, but further research is necessary for accurate conclusions. Future research should use longitudinal data with detailed achievement and behavior data to identify child progress prior to receipt of special education services and should also examine matches between students and teachers at the classroom level, allowing for more precise measurement of student-teacher racial match. Finally, future qualitative research can make better sense of why students are referred for special education in different contexts. Because of the uncertainty in interpretation, the implications for practice (beyond a call for more research) are not entirely clear. Research on other child outcomes indicates that increased representation of teachers of color is beneficial for students, suggesting the importance of teacher preparation pipelines for teachers of color.

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