The Intersection of Race/Ethnicity, Gender and Exceptionality:

The Racialized Construction of Educational Disabilities and Giftedness

By

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ABSTRACT

In this dissertation, I explore the relations between student race/ethnicity, nativity, gender, and exceptionality, and I examine how school context shapes those relations. I argue that exceptionalities are socially constructed, and that different categories of exceptionality have different meanings and statuses.

In the first empirical chapter, I use a factorial vignette survey to test for race/ethnicity, nativity, and gender effects in how teachers respond to children indicating academic and behavioral differences in the classroom. I found that boys of color were more likely to be suspected of exceptionality when they exhibit behavioral challenges. I argue that the category of emotional disorder, in particular, may maintain or exacerbate racial/ethnic inequalities in education.

In the second empirical chapter, I use a dataset of Wisconsin public school students to test whether and how school racial/ethnic composition moderates the relationship between individual-race/ethnicity and placement in special education across the more subjective categories of disability. I find that white students who attend schools with more peers of color have increased risk of identification with more-advantaged disabilities, while students of color that attend schools with more same-race peers have decreased risk of placement in special education. These findings support explanations of frog-pond effects driven by racial/ethnic bias and also the mechanism of racial/ethnic competition.

In the final empirical chapter, I use school-level racial composition data and an experimental survey design to examine whether a student's race/ethnicity, nativity, and gender affect teacher decisions to refer for exceptionality testing differently in schools with different racial/ethnic compositions. I find that in schools with more white students, teachers are less likely to perceive academic challenges as disability when evaluating a boy of color. While white boys experience decreased likelihood of referral for behavior problems in schools with more white students, boys of color experience no such decrease. Conversely, when they work in schools with more white students, teachers are more likely to refer girls of color when they have academic challenges, and less likely to refer when they have behavioral challenges. I argue that these findings suggest some support for contextual effects explained by racial-bias-driven frog-pond effects.

DEDICATION

This dissertation project was inspired by my students at Indian Hills Elementary School in Gallup, New Mexico. I dedicate this project to every student that was on my special education and gifted caseloads, as my experiences teaching them, advocating for them, and developing relationships with them have maintained my passion for this topic throughout my doctoral training.

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Introduction

Introduction

Even before special education services were universally available in public schools, researchers noticed that minority and lower-income students were more likely to be in special education classes than their white and middle class peers (Dunn, 1968; Mercer, 1973). Today, black and Native American students outpace the disability rates of white, Latino, and Asian students across all types of exceptionalities,[1] with students identified as Native American at 14%, black at 13%, white at 9%, and Asian at 8% (Dunn, 1968; US Department of Education, 2006; Mercer, 1973). Examining the data within exceptionality categories reveals even wider gaps: black students are diagnosed with Emotional Disorder at twice the rate of their white peers (US Department of Education, 2010a), and they are diagnosed with Intellectual Disability at nearly three times the rate of white or Latino students (National Center for Education Statistics); Native American students are twice as likely as white or Latino students to be identified with Specific Learning Disability. On the opposite end of the spectrum of exceptionalities, white students are three times more likely to be identified as Gifted/Talented than their black, Latino, or Native American peers (NEA, 2007).

WHY IS THERE RACIAL/ETHNIC DISPROPORTIONALITY IN SPECIAL AND GIFTED EDUCATION?

Decades of attention to racial disparities in special education led to the 1997 and 2004 reforms to the Individuals with Disabilities Education Act, mandating that districts monitor and remediate disproportionate representation (US Department of Education, 2010b). The law presumes, just as most of the scholarly literature and court cases on the issue, that the

[1] "Exceptionality" refers to the label given to students identified as having cognitive or social-emotional abilities, achievements, or behaviors that diverge significantly from population means. "Exceptionality" and "disability" are typically interchangeable, though "exceptionality" is often preferred for its more positive connotations.

disproportionality results from inappropriate identification and racial/ethnic bias, and that rates of disability should not vary by racial/ethnic background (Council for Children with Behavior Disorders, 2012). Specifically, the unstated assumption is that any variation from incidences among white students is problematic (Artiles, 1998; Artiles & Bal, 2008). Federal law and scholarly research have paid far less attention to similar disparities in gifted education and to gender disparities in exceptionalities. An increasingly public and heated debate has questioned the assumptions of racial/ethnic bias and the relevant policy, asserting that confounders, such as poverty and other disadvantages that are associated with race/ethnicity, explain racial/ethnic differences (Morgan & Farkas, 2015; Welner & Skiba, 2015). Despite the polarization of the controversy, these explanations are not mutually exclusive. Indeed, they are likely deeply interconnected: children develop skills and behaviors in the context of classrooms and schools that treat them differently by race/ethnicity, and these same skills and behaviors are deemed disordered or exceptional by the school (Artiles et al., 2010).

Disparities within School Processes: The Case for Racial/Ethnic and Gender Bias

In the racial bias explanation, schools incorrectly identify students as having exceptionalities who do not, or they fail to identify students who do have exceptionalities. The discrimination explanation of racial/ethnic disproportionality in special education has been accepted in popular and legal spheres (Larry v. Riles 1972, 1974), and has largely been based on disparities observed in bivariate analyses. Scholars point to factors such as white teachers' biased perceptions of student behavior (Hosp & Reschly, 2004; Zucker & Prieto, 1977) and psychometric test bias (McLeskey, Waldron, & Wornhoff, 1990), but the evidence has mostly been inconclusive (Donovan & Cross, 2002; Waitoller, Artiles, & Cheney, 2010).

Schools Responding to Real Differences in Need by Race/Ethnicity: The Case for Confounders

Alternatively, children may simply arrive at school with different propensities for exceptionalities by race/ethnicity, and schools are responding to these differences. A growing body of research argues that confounders completely explain racial/ethnic disproportionality in special and gifted education. Indeed, cognitive and socio-emotional outcomes may be affected by a variety of factors known to differ by race/ethnicity, such as household income (Morris & Western, 1999), wealth (Oliver & Shapiro, 1995), neighborhoods (Harding, 2003; Sharkey & Elwert, 2011), and environmental toxins such as lead (Lanphear, Dietrich, Auinger, & Cox, 2000). Children's experiences across and within schools may also exacerbate racial/ethnic achievement gaps (Condron, 2009; Downey, Hippel, & Broh, 2004), likely contributing to incidences of exceptionalities (Donovan & Cross, 2002).

For linguistic minority and immigrant students, the relationship between race/ethnicity and placement in special and gifted education may be further confounded by educational disparities rooted in language background. The literature indicates both over- and under-placement of these students (Limbos and Geva 2001; Artiles, et al. 2005; Shifrer, et al. 2011; Hibel and Jasper 2012). Teachers are often unclear whether these students' academic difficulties are best addressed through special education services or through English as a Second Language (ESL) services (Klingner, Artiles, & Barletta, 2006; Limbos & Geva, 2001; Samson & Lesaux, 2009). This is likely an especially important factor for understanding the rates of special education and gifted placements for Latino students, who make up 79% of the English Language Learner (ELL) population in the United States (Kohler & Lazarín, 2007).

A growing body of literature attempts to isolate race/ethnicity from possible confounders to explain racial/ethnic differences in schools' identification of exceptionalities. The evidence has been mixed, with some studies finding that race/ethnicity predicts exceptionality status after

controlling for socioeconomic status (Coutinho, Oswald, & Best, 2002; Oswald, Coutinho, Best, & Singh, 1999; Skiba, Poloni-Staudinger, Simmons, Renae Feggins-Azziz, & Chung, 2005), and others arguing that the relationship between race and exceptionality is fully explained by inequalities that are correlated with race/ethnicity (Hibel, Farkas, & Morgan, 2010; MacMillan & Reschly, 1998; Morgan, Farkas, Hillemeier, & Maczuga, 2012; Morgan et al., 2015; Shifrer, Muller, & Callahan, 2011). More recent, rigorous research find that once socioeconomic status, ability at school entry, and school context are taken into account, black and Latino students are actually *less* likely to be placed in special education than their white peers (Hibel et al., 2010; Morgan et al., 2012; 2015; Shifrer et al., 2011). Recently, some of these authors have argued that such results indicate that federal disproportionality legislation is inappropriate, and that *more* students of color should be placed into special education (Morgan & Farkas, 2015).

The Challenge of Disentangling Complex Causes

While the recent research on confounders explaining the racial/ethnic disproportionality asserts that it has disproven the possibility of racism (Morgan & Farkas, 2015), this body of research has not settled the question of why students of different racial/ethnic groups and genders have different incidences of exceptionalities. These largely observational studies are limited in their ability to answer whether and how student race/ethnicity affects identification of disability and giftedness. Any number of unobserved factors may confound estimates of the effect of race/ethnicity, socioeconomic status, and other factors on placement in special education and gifted services. The population of students that are identified with exceptionalities is likely qualitatively different from the population that is considered "typical," and likely in ways that are not fully measurable with state test scores, free-and-reduced lunch status, and other typical control variables. Additionally, the effects of race/ethnicity may vary depending on the type of

exceptionality, particularly for behavioral versus academic challenges, yet most of the research lumps together the categories of disability, or examines a limited set of disability categories, and ignores giftedness. Additionally, while skills at Kindergarten entry or in earlier grades explain much of the variation by race/ethnicity in special education placement (Hibel, Farkas, and Morgan 2010; Morgan, et al. 2012; Shifrer et al. 2011), these measures of academic and behavioral performance are subject to the same possible effects of racial/ethnic discrimination.[2]

The majority of the existing literature maintains a relatively narrow and oversimplified focus on disproportionality (Waitoller et al., 2010). It tends to discount the ways that the school structure mediates disproportionality (Waitoller et al., 2010), and treats identifying exceptionalities as a purely *functional* phenomenon: essential, natural categories that indicate neurophysiological differences. In contrast, as I will discuss below, I argue that exceptionalities are socially constructed and dependent on the social context. The meaning and status of different categories of disability vary, with implications for the students who are more or less likely to be categorized depending on race/ethnicity, nativity, and gender.

THE MEANING OF DISABILITY

In this dissertation, I seek to contribute to understanding of the causes of racial/ethnic and gender disproportionality. In particular, I aim to provide causal evidence of whether racial/ethnic and gender bias affects teacher decisions to refer children to special education and gifted/talented testing, and I examine how school context differentially shapes the identification of disabilities for students of different racial/ethnic backgrounds and genders. First, however, I will outline the

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[2] In the studies using the Early Childhood Longitudinal Study (Hibel, et al. 2010; Morgan, et al. 2012), the academic tests are administered one-on-one by assessors, and the behavioral measures derive from teacher rating scales (NCES 2014). In the research using the Educational Longitudinal Study, academic history is taken into account using grade retention (Shifrer et al. 2011), which also may be affected by racial/ethnic bias or racially/ethnically varying quality of educational experiences.

identification process, and I will problematize the way exceptionality and identification are treated in the majority of the literature, setting the stage for a more nuanced understanding of different exceptionality outcomes.

Schools' Exceptionality Identification Process

The process of identifying exceptionalities is designed to be extensive, bureaucratic, and rule-driven in order to reduce inappropriate placement of students in special education. Inherent to this process is the assumption that exceptionalities are neurophysiological differences that are to be discovered by professionals. For any kind of exceptionality, parents, medical professionals, and educational professionals can start the process of determining whether a child might qualify. More severe and objectively diagnosed disabilities, such as severe Intellectual Disability, Orthopedic Impairment, and Hearing Impairment, tend to be identified by medical professionals when children are very young. More subjective, less severe exceptionalities, such as Specific Learning Disability, Emotional Disorder, and Gifted/Talented, tend to be identified later by school staff. For disabilities, the process starts when the teacher or other adult perceives a "consistent need or problem exhibited by the student" that constitutes a "discrepancy in the student's academic, social/emotional, behavioral, and/or physical ability and his age" (Project IDEAL In Action, N.D.). The teacher or other school staff then start the "pre-referral" process, in which targeted interventions are provided with the aim of preventing referral to special education testing (Project IDEAL In Action, N.D.). If the student continues to exhibit challenges, he is referred for psycho-educational testing, after which a multidisciplinary team is supposed to objectively determine whether the child qualifies (Project IDEAL In Action, N.D.). Gifted/talented identification, which is not covered by federal disability law, does not have a standardized identification procedure. Some school districts rely on teacher or parent referrals,

and some use universal screening processes; the criteria for giftedness also vary from district to district, including competencies such as academic achievement, cognitive test scores, and creativity (Renzulli & Reis, 2004). Team decisions on whether to qualify a child with an exceptionality, which exceptionality to qualify, and what kind of services to provide may be influenced by special education funding structures (Parrish, 1995). Processes for this funding vary between states. In Wisconsin, the context of this project, the majority of the funding for students with disabilities is allocated based on total student enrollment in a district, as well as a proportion determined by the proportion of students in poverty (Wisconsin Department of Public Instruction, N.D.). It is possible that this system creates incentives to avoid labeling children with disabilities, or to provide less services at a lower cost than systems in other states, in which the funding is allocated based on the number of students with identified disabilities and the level of services determined necessary by the school (Parrish, 1995).

Exceptionality as a Socially Constructed Category

The education and social science literatures have largely treated racial/ethnic disproportionality in exceptionality incidences as a simple overlapping of natural categories: a problem to document and remediate through reforms to the special education referral process. Instead, I conceptualize both race/ethnicity and exceptionality as social constructs. These concepts are generally taken for granted as objective reality. Yet they have both objective and subjective aspects, and this knowledge is continuously produced by social interaction, embedded in time and place (Berger & Luckman, 1966, Burr, 2003). Race/ethnicity and exceptionality intersect to produce racial/ethnic disproportionality in specific exceptionality categories and specific racial/ethnic contexts.

Outside of research on racial/ethnic disproportionality in special education, social

theorists have argued that exceptionality is a social construct. Mercer (1973) used labeling theory to describe the "six-hour retarded child" who was only below average within the school context. Mehan and colleagues (1986) conducted an extensive case study of a large school, arguing that exceptionalities are not influenced by individual characteristics, but rather that they are "a feature of institutional practice." This perspective was extended by Dudley-Marling (2004), who argued that learning disabilities are not merely failures within the "heads of individuals," but rather that they are embedded in human activity and relations. Research on children identified with learning disabilities (the exceptionality receiving the greatest theoretical and empirical attention) rarely demonstrate clear signs of brain abnormalities (Christensen, Gerber, & Everhart, 1986; Erchak & Rosenfeld, 1989). Indicators of each soft exceptionality category often overlap one another, as is the case with behavioral difficulties that may be evidence of giftedness or of emotional/behavioral disorder (Roedell, 1984). Similarly, cognitive processing challenges may be interpreted as intellectual disability or as learning disabilities (Harry & Klingner, 2007; Sleeter, 1987). Furthermore, incidences vary across schools (Hosp & Reschly, 2003; D. Oswald et al., 1999), across geographic contexts (MacMillan & Reschly, 1998), through time (Gottlieb & Alter 1994; Liu, et al. 2010) and across racial/ethnic categories (NEA, 2007; Skiba et al., 2008). Exceptionalities are treated as though they refer to differences that are intrinsic, but instead they are based on comparisons to other students; they are products of the social context (Artiles & Bal, 2008; Dudley-Marling, 2004; Artiles, Aguirre-Muñoz, & Abedi, 1998; Gerber, 2005; Gerber & Semmel, 1984).

Subjectivity of disability label. The federal government recognizes thirteen categories which qualify students as eligible for special education services: Autism, Deaf-Blindness, Deafness, Emotional Disturbance, Hearing Impairment, Intellectual Disability (previously

known as Mental Retardation), Multiple Disabilities, Orthopedic Impairment, Other Health Impairment (includes Attention Deficit Hyperactivity Disorder), Specific Learning Disability (includes disorders like dyslexia), Speech-Language Impairment, Traumatic Brain Injury, and Visual Impairment (US Department of Education, 2010a). While the qualification guidelines presume that these categories are neurophysiologically distinct types of disability, some categories are more subjective than others. Three have been identified consistently by researchers as less subjective: Orthopedic Impairment, Auditory Impairment, and Visual Impairment (Connor, 2005; Donovan & Cross, 2002); Shifrer & Fish, 2014), as physicians are required to assign these categories, the occur in lower incidence rates, they are assigned at earlier ages, and the labels maintain stability over the course of the child's schooling (Shifrer & Fish, 2014). The more subjective, higher incidence disabilities (Autism, Emotional Disturbance, Intellectual Disability, Other Health Impairment, and Specific Learning Disability), are not only more subjective in terms of *whether* a disability is diagnosed, but they are also more subjective in terms of *which* disability is diagnosed. Indicators such as low skills, difficulty interacting with peers, and difficulty with attention to task, for instance, fit the criteria for multiple categories of disability.

Differential status of disabilities. Among students experiencing academic, social, or behavioral difficulty in school that lead to placement in special education, the subjectivity of the disability diagnosis allows for factors outside of the diagnostic criteria to play a role, such as bias by gender or race/ethnicity and parent preferences. Despite the tendency of research on disability placement, and especially research on minority overrepresentation in special education, to describe placement in all categories of disability as social disadvantage, I follow in the footsteps

of a growing critical disability perspective of divergent statuses and advantages of disability labels (Blanchett, 2010; Ong-Dean, 2006; Sleeter, 1987).

I conceptualize the more subjective disability categories into two types: those that are higher status and more advantaged in nature, and those that are lower status and less advantaged. More-advantaged disabilities include Other Health Impairment, which is most frequently the label for ADD/ADHD (Grice, 2002), Speech-Language Impairment, and Autism. These categories tend to be associated with lower stigma (Blanchett, 2010; Harry & Anderson, 1994; Ong-Dean, 2009), with autism in particular being linked to high intelligence (Grandin, 2008) and has been described as an alternative to Intellectual Disability and Specific Learning Disability for those who can advocate for it (Eyal, 2013; Liu, King, & Bearman, 2010; Ong-Dean, 2009). The labels also tend to provide relatively clear benefits with few potential negative effects, such as extra time for assignments when a student has ADHD, or focused speech therapy for a Speech-Language Impairment. Speech-Language Impairment in particular has a relatively high rate of exiting students from special education, generally because the student has been "cured" of the impairment (Special Education Longitudinal Study, 2005). Students in these categories tend to be excluded less from the general education classroom (US Department of Education, 2013), allowing them to access the general education curriculum. About 64% of students labeled with Other Health Impairment, for instance, are in the least restrictive setting, spending 80% or more of the day in the general education classroom, and only 3.9% of these students are placed in out-of-school environments, such as separate schools, residential facilities, or correctional facilities (US Department of Education, 2013). For students with Speech/Language Impairment, 87% are in the least restrictive setting, while only 3% are in out-of-school environments. Only 39% of students with Autism spend 80% or more of the day in the general education classroom, and 9%

are served in out-of-school environments, making this criteria less applicable for the category, and likely reflecting the more extensive needs of many children with Autism.

For students identified with these categories, a disability label medicalizes underperformance and social-behavioral differences, shifting blame off the shoulders of both the students (Conrad, 1976; Conrad & Potter, 2000) and the schools (Dudley-Marling, 2004; Varenne & McDermott, 1998). The academic, social, and behavioral challenges are seen as *deserving* extra resources to allow the students to achieve at higher levels, such as extra time for assignments, more attention from teachers, and other support services (Ho, 2004).

Less-advantaged disability categories include Emotional Disturbance, a disability category that refers to students exhibiting behavioral problems such as defiance, and Intellectual Disability, which refers to students with significantly reduced cognitive functioning and adaptive behavior. Students with these disabilities tend to be excluded from the general education classroom more than students in other categories, with only 17% of students with Intellectual Disability spending 80% or more of the day in the general education classroom, and 43% of students with Emotional Disturbance in that least restrictive setting (US Department of Education, 2013). Notably, 18% of students with Emotional Disturbance are educated in out-of-school environments, a rate only surpassed by students identified with Deaf-Blindness (29.9%) and Multiple Disabilities[3] Less-advantaged disabilities are associated with greater stigma (Blanchett, 2010; Harry & Anderson, 1994; Ong-Dean, 2009). Emotional Disturbance,

[3] "Multiple Disabilities" refers to "concomitant impairments (such as mental retardation-blindness or mental retardation-orthopedic impairment), the combination of which causes such severe educational needs that they cannot be accommodated in special education programs solely for one of the impairments" (US Department of Education, 2004). A student diagnosed with more than one disability would not automatically receive this label; rather, the need must be sufficiently severe.

specifically, is applied when a student's misbehavior is seen as problematic enough to be considered a chronic, medicalized disorder, and it is associated with juvenile incarceration (Rutherford, Bullis, & Anderson, 2002).

One more-subjective category of disability, Specific Learning Disability, straddles both the more-advantaged and less-advantaged typologies. The disability refers to students that do not meet grade-level standards in one or more areas, yet whose deficits are not explained by any other disabilities or lack of appropriate instruction (Wisconsin Department of Public Instruction). Scholars have argued that this category of disability, which was rare until the late 1970's, arose as a way for more advantaged families to explain their children's low performance (Ong-Dean, 2006; Sleeter, 1987). Over time, the label has largely taken the place of Intellectual Disability for many students (Gottlieb & Alter, 1994), suggesting that it is a preferred and higher status category. Yet Ong-Dean (2006) argues that the label has shifted recently to a low-status disability. Students with this disability are largely served in the general education classroom, with 66% spending 80% or more of their day in the general education classroom.

While arguably the best way to identify the relative statuses and advantages of disability categories is through examinations of student outcomes, little is known about the effects of special education – neither broadly or for specific types of disabilities. Therefore, researchers often examine the average qualities of the children within each disability category to understand the status differences (Ong-Dean, 2009), with findings that support the more-advantaged/less-advantaged typology described here. Students of color and of lower socioeconomic status are more likely to be labeled with Emotional Disturbance and Intellectual Disability, while white and middle class students tend to receive labels associated with higher intelligence, such as Specific Learning Disability and Other Health Impairment (Blanchett, 2010). Autism is more prevalent

among children whose mothers have more education (Croen, Grether, Hoogstrate, & Selvin, 2002), and the geographical clustering of autism has been explained by the sharing of information among families with more privilege (Liu et al., 2010). Use of medication for ADD/ADHD, the most frequent indication for the category of Other Health Impairment, is associated with higher socioeconomic status, particularly in states with strict accountability policies. Finally, while Specific Learning Disability was once primarily diagnosed among white students, this category has shifted over time, with students of color increasingly represented in the category (Ong-Dean, 2006).

DISENTANGLING COMPLEX CAUSES AND COMPLEX OUTCOMES

Exceptionalities are far from a monolithic outcome, suggesting that they serve different purposes for different sets of students. Taking this complexity into account is necessary to understanding the nature of racial/ethnic disproportionality in special and gifted education. In this dissertation, I seek to contribute to research on race/ethnicity, nativity, gender, and exceptionality in several ways. First, I aim to adjudicate between the polarized explanations of racial/ethnic disproportionality: those who argue that the disproportionality reveals racial/ethnic bias and those who argue that confounders explain the disparity. I include analyses of gender, a long-neglected area of exceptionality disparity in its own right, but especially important to this project because of the potential for gender disparities that intersect with, and help explain, racial/ethnic disparities. Therefore, in Chapter 3, I use an experimental survey design to test for race/ethnicity, nativity, and gender effects in teachers' decisions to refer students for pre-referral and testing for exceptionalities, distinguishing between three types of possible exceptionalities.

Next, I seek to expand understanding of the role of school context in racial/ethnic disproportionality. Existing research has largely treated school context as a mere confounder that

explains racial/ethnic disparities, yet the school racial/ethnic context has the potential to shape student outcomes differentially by race/ethnicity. I address this descriptively in Chapter 4, testing whether racial/ethnic composition moderates the relationship between race/ethnicity and exceptionality, distinguishing between more-advantaged and less-advantaged categories of exceptionalities. Finally, in Chapter 5, I examine one potential mechanism of school context by testing whether school-level racial/ethnic composition moderates the race/ethnicity and gender effects on teachers' decisions to refer children to exceptionality testing.

Chapter 2

Methods

Methods

In this research project, I seek to examine the relations between student race/ethnicity and gender, school racial/ethnic context, and how schools categorize students into exceptionality categories. I use two datasets to conduct three empirical analyses. First, I use a dataset of the entire public school population of Wisconsin to examine whether and how school racial/ethnic composition moderates the relationship between student-level race/ethnicity and disability status. Next, I use a factorial vignette survey, an experimental design, to test for the existence of one potential mechanism of racial/ethnic disproportionality in special and gifted education, racial/ethnic and gender bias in teachers' referrals of students to exceptionality testing procedures. Finally, I ask whether that mechanism might explain the descriptive patterns observed in the first empirical chapter. I combine the two datasets and test for moderation of the experimental effects by the school racial/ethnic composition.

STUDY CONTEXT

This research study takes place in Wisconsin, which has three advantages as a location for the study: 1) it has a wide range of racial compositions in its schools, 2) it has notable racial inequalities in education and specifically in special education, and 3) my research is well aligned with the plans and interests of the state's Department of Public Instruction and district goals, which facilitated acquisition of district-level permission. The state's public schools have a wide range of racial compositions, allowing for the investigation of schools with higher and lower levels of black, Latino, Native American, and white populations. Like many states, Wisconsin struggles with racial achievement gaps and racial/ethnic disproportionality in special education.

Wisconsin has been consistently identified as having one of the widest racial achievement gaps in the U.S. (Vanneman, Hamilton, Anderson, & Rahman, 2009).

OBSERVATIONAL DATA

Chapters 4 and 5 of the dissertation ask how school-level racial composition moderates the relationship between student race/ethnicity and exceptionality status. I use a dataset from the Wisconsin Department of Instruction that includes all 895,791 students in all 2,214 schools in the state in 2010-2011 for both of these chapters, using this dataset alone for Chapter 4, and merging it with the experimental survey data for Chapter 5. The size and completeness of the dataset allow for estimation of outcomes that have largely been left out of the more rigorous analyses of racial/ethnic disproportionality in special education, notably Emotional Disorder.

Student-level data. Descriptive statistics for the variables used in Chapters 4 and 5 can be found in Table 1. The student-level variables used in the observational data analysis include gender, racial/ethnic background, socioeconomic status, attendance, student transience, academic test scores, and disability status. Gender is coded so that 0 is female and 1 male, and 51.6% of the Wisconsin public school population is male. The race/ethnicity variables include Asian, which makes up 4% of the population, black, which makes up 11.3% of the population, Latino, which makes up 9.5% of the population, and Native American, which makes up 1.7% of the population. The population includes 7.4% English Language Learners (ELL), and 39.1% of the students qualify for free or reduced lunch, the available measure of socioeconomic status. Attendance is included, and mean-centered in the analyses; the average attendance rate is 94.3%. The measure for transience, whether the student transferred schools in the last year, has a mean of 3.2%. The reading and math proficiency levels, which range from 1 to 4, have means of 3.230 and 3.012, respectively.

The student-level outcome variables include whether the student is labeled with any educational disability, as well as the soft disability categories of theoretical interest. Giftedness, unfortunately, is not included in the data. Fifteen percent of the students have any disability. The more-advantaged disabilities, as described in the introduction, include Autism, which applies to 1.0% of the population, Other Health Impairment, which applies to 2.3% of the population, and Speech Language Impairment, which applies to 3.8% of the population. The less-advantaged disabilities, which include Emotional Disorder and Intellectual Disability, include 1.6% and 1.1% of the population, respectively. Finally, Specific Learning Disability, which falls in neither category of the disability status typology, includes 4.4% of the population. The small proportions of the population that are labeled with each of these exceptionalities highlights the value of using this large, state-wide data-set, as even the category with the smallest proportion, Autism, includes 9,096 students.

School-level data. The school-level variables include racial composition, measured as mean proportion Asian (3.3%), mean proportion black (10.2%), mean proportion Latino (8.5%), and mean proportion Native American (2.0%). The variable proportion white, used in the final empirical chapter, is grand mean centered. The observational data analysis also uses measures of the proportions of students that are ELLs (6.3%), qualify for free or reduced lunch (41.1%), and that transferred schools in the last year (4.9%). The data also include the average attendance (94.1%), reading proficiency level (3.2), and math proficiency level (2.9), which are computed from the student-level data. The school-level data also include teacher data, which unfortunately, is only available for schools, and not by classroom or by student. These data include the proportion of teachers of color (4.4%), the proportion of teachers with master's degrees (51.4%), the proportion of teachers with 5 or more years of experience (83.1%), and the proportion of

bilingual teachers (0.6%). The data indicate that teachers in Wisconsin are more experienced than most teachers in the U.S., of whom 9.0% have less than three years of experience, and of whom 33.3% have between 3 and 9 years of experience (National Center for Education Statistics, 2012). It is possible that the experience level of Wisconsin teachers has reduced since these data were collected, however, as teacher exits increased from the state following cuts to benefits and collective bargaining (Bauer, 2011).

Missing data. The analyses of state-level data use list-wise deletion of cases with missing values. Analyses that include individual achievement test scores drop students in grades Pre-Kindergarten through 2, 9, 11 and 12, as these students do not receive a score through the Wisconsin Student Assessment System, leaving a sample of 429,228 students in 2,040 schools. Analyses that include teacher data at the school level drop 0.93% of the observations that are missing that information. The attendance variable is missing 0.29% of the observations, which are dropped in the analyses including attendance.

EXPERIMENTAL SURVEY DESIGN: AUDITING TEACHER DECISIONS THROUGH FACTORIAL VIGNETTES

To answer the question of whether and how student race/ethnicity and gender influences teachers' referrals to special education, I use a factorial vignette survey (Rossi & Nock, 1982), with 275 teachers in 111 schools from across Wisconsin. This experimental survey method combines balanced multivariate experimental designs with sample survey procedures. Factorial vignette surveys synthesize narrative descriptions of situations from sets of variables of interest, allowing for the testing of causal effects of combinations of independent variables.

In the present study, I apply the design by creating vignettes that describe fictional students, randomly assigned to elicit perceptions of the student's race/ethnicity, gender, and

cluster of exceptionality "symptoms" (see Appendix for a sample vignette). Teacher-participants are instructed to read the vignette, imagining the fictional student is in their classroom, and then to respond to a series of questions on how they would support the student – including whether they would refer the student to exceptionality testing. The factorial vignette design allows for causal inferences about the relationship between perceived race/ethnicity, gender, and exceptionality status; it also facilitates more nuanced questions about whether these relationships vary by the type of exceptionality. This approach approximates an audit study, the optimal way to isolate individuals' bias within a real-world context (Bertrand & Mullainathan 2003; Pager 2003; Anderson-Clark, et al. 2008).

Vignette Construction

I created narrative vignettes of fictional students with the characteristics relevant to my question: race/ethnicity, gender, nativity, family financial resources, academic history, parent involvement, academic achievement and social skills. Because I am most interested in the interactions of race/ethnicity, gender, and nativity, and how they predict outcomes for three types of exceptionalities, the vignettes hold the remaining characteristics constant. Table 2 lays out the structure of the 24 different vignettes, which fully cross gender, race/ethnicity, and type of exceptionality, and allow for nativity to vary within the vignettes meant to induce perceptions of Latino ethnicity. Additionally, the vignette ordering is randomly assigned.

Factors 1 and 2: Race/ethnicity and gender. For this experiment, which is concerned with the role of racial/ethnic and gender bias in referrals, I am concerned with the teacher's perception of the student's race/ethnicity and gender. A factorial vignette survey allows for such precision of operationalization, in contrast to observational data analyses that rely on school documentation or parent reports of race/ethnicity, potentially obfuscating both measurement of

that variable (i.e., others' perceptions of one's race versus claimed identity) and the mechanisms that actually make race/ethnicity salient to stratification (i.e., racial/ethnic bias, disproportionate poverty, devaluation of non-white cultural capital). In the survey, I code race/ethnicity and gender through names associated with specific racial/ethnic backgrounds and genders. Bertrand and Mullainathan (2003) use names to encode race in identifying employer bias with resumes. They identify lists of names that have near perfect likelihood of being perceived as "black names" or "white names." Anderson-Clark, Green, and Henley (2008) also utilized this strategy in a vignette study of teachers' perceptions of student achievement, testing the effect of racially-encoded names compared to the effect of stating race, finding significant racial bias only through the use of names. As Bertrand and Mullainathan (2003) note, the use of names to signify race/ethnicity may be confounded by the perception of socioeconomic disadvantage. It should be noted that in their tests of higher- and lower-SES names within each racial category, the race effects were not driven by SES. As I will discuss below, I control for SES both through the name selected, when possible, as well as through cues in the vignette.

I use six names in this experiment, meant to induce perceptions of male and female white, black, and Latino children. David Figlio provided a list of names for black and white children; using Florida vital statistics from 1994-2002, he calculated these names as racially identifiable (90% or more of children with that name are the same race), the names are given at least five times per year, and the mothers of children with these names average 11.3-11.5 years of education. At his request, the names will not be listed publicly. Because Fliglio's data indicate that racially identifiable names for Latinos are not identifiable by socioeconomic status, I used baby names from the year 2000 (Social Security Administration, 2013). A larger list of names was tested in a pretest survey with 200 University of Wisconsin-Madison undergraduates, asking

them to guess the race/ethnicity and social class of the name. As about 60% of University of Wisconsin-Madison undergraduates are Wisconsin residents, they are likely fairly representative of the targeted participants for the full study, teachers in Wisconsin schools (University of Wisconsin Office of the Registrar, 2014). They may have more experience with racial/ethnic diversity than teachers in many Wisconsin schools, however, because they attend school at the University of Wisconsin-Madison. The results of that survey provided the final six names that were most likely to induce the desired perceptions of race/ethnicity and social class.

Factor 3: Nativity. To better test for the possibility that Latino students are being referred to ELL services as an alternative to special education services, I include a factor in half of the Latino vignettes meant to induce perceptions of families that are more recent immigrants. For these vignettes, the portion describing parent involvement included the phrase, "who speaks limited English."

Factor 4: Exceptionality "symptoms." The vignettes include lengthy descriptions of students' academic, social, and emotional strengths and challenges. These descriptions fall into three categories: 1) mild academic difficulties, 2) mild behavior problems with higher academic skills, and 3) moderate social and behavioral challenges with low-average academic skills. The symptoms in the categories correspond to several potential exceptionality categories: in the first, mild academic difficulties, was designed to be perceived as specific learning disability or mild intellectual disability. The second category, mild behavior problems with higher academic skills, was designed to be perceived as giftedness or as more mild emotional disorder. The final category, moderate social and behavioral challenges with low-average academic skills, was designed to be perceived as emotional disorder.

The exceptionality indicator portions of the vignettes were created from school psychology textbook descriptions of these exceptionalities. I refined this factor through three focus groups with teachers in two Wisconsin elementary schools. The descriptions were designed to be perceived as borderline cases, facilitating greater variation in potential teacher-participant responses and therefore allowing for the identification of biased decisions. Additionally, because young children with gifted exceptionalities often display social difficulties and poor classroom behavior when insufficiently challenged, students that might benefit from gifted/talented services may be inappropriately identified as having emotional disorder and vice versa, perhaps varying by racial/ethnic bias (Roedell, 1984; Morrison, 2001). Therefore, the category of mild behavior problems with higher academic skills was designed to be perceived as potential giftedness or emotional disorder. In addition to validation from focus groups, in-person survey administration in my previous project provided further, informal assurance that the descriptions of students were appropriate for the task: participants frequently commented that they have students "just like this one in my class."

Constants. Because many other factors may drive perceptions of students' abilities, achievements, and behaviors, SES is held constant across vignettes, as are other aspects of the student and his family. Every student is described as having good attendance, with a caring parent or grandparent who struggles to help with homework due to multiple jobs and/or low academic skills. Low socioeconomic status is indicated by the name when possible, as well as a parent described as having multiple jobs or by phone service being cut off, which also indicates challenges to parent involvement.

Deception

This survey required some deception, as directly asking teachers about their racial/ethnic bias is documented to inhibit said bias (Anderson-Clark, et al. 2008). In addition to coding race/ethnicity and gender through names, as is discussed above, I described the study to participants as a survey of "how teachers support students that are just beginning to exhibit academic and behavioral differences in the classroom." I also described the purpose of the study as having "the potential to identify better ways to support teachers as they intervene for their students." I did not mention referrals to special education or race/ethnicity to participants in the description of the study.

Sample Recruitment and Description

The target population of participants for this study is third- and fourth-grade teachers in schools with heterogeneous racial/ethnic compositions. These grade levels are commonly known in elementary schools as frequent years of referral for soft disabilities, as was confirmed by teachers in focus groups I conducted in preparation for the present study and by recent research on disability classification (Shifrer & Fish, 2014). Focus group participants indicated that in these grade levels, students begin applying the skills learned in early elementary school ("learn to read" in grades K-2; "read to learn" starting in grade 3). While in earlier grades, more obvious and objectively-diagnosed exceptionalities are often diagnosed, in the middle elementary years, less obvious academic and behavioral weaknesses are amplified as challenges to curricular progress.

Recruitment. To ensure adequate variation in school racial/ethnic composition, all Wisconsin schools were divided into blocks before a set was randomly selected for recruitment: 0-9% black, 10-49% black, 50-89% black, 90-100% black, 0-9% Latino, 10-49% Latino, 50-

89% Latino, 90-100% Latino, and 0-9% white, 10-49% white, 50-89% white, 90-100% white. Schools within these blocks were randomly selected for recruitment.

Permission to conduct research was first acquired at the school district level via phone, email, or online research application forms. Larger school districts with research personnel were provided a full description of the study, including the research questions and discussion of deception. Smaller school districts, in which the administrator providing permission was frequently a principal, were provided with the same description of the research that teachers receive. These principals have regular contact with the participants, therefore deception was deemed necessary to reduce the risk of the participants learning the full research questions. After district administrators provided permission, school principals were contacted for permission to conduct the research. Again, because of their regular contact with the participants, principals were not informed of the full research questions. Principals who permitted the research project were then sent an email to forward to 3rd and 4th grade classroom teachers, which included a brief description of the survey, a link to take the survey, and explains that participants will receive a $10 gift card to a large online retailer and will be entered into a lottery for a tablet computer if they complete the survey. Two-hundred seventy-seven schools were recruited, permission was granted at 186 schools, and 263 teachers participated from 111 schools.

Survey procedure. When teachers click the link forwarded to them by their principals, they are directed to the survey, which was created and hosted by Qualtrics. Their responses are anonymous, and are linked to the appropriate school data through a code in the link. Teachers read a vignette, respond to the rating and ranking questions about their choices of interventions, and answer questions about their gender, race/ethnicity, and teaching experience. After they

complete the survey, they are redirected to a separate website, where they enter their information to receive the incentives.

Sample description. As is suggested by the factorial vignette survey literature (Rossi & Nock, 1982), the vignette within each survey is the unit of analysis – not the individuals completing the surveys. My sample size is 542 according to this logic, with 263 different participants. The sample is not a representative sample of Wisconsin teachers, as the blocked recruitment purposefully sought a sample from schools with greater variation in racial/ethnic composition than the state as a whole. Furthermore, the school districts and schools that permitted the project are likely different than those who did not. For example, administrators from schools with fewer resources may be less likely to respond to the research requests, as they may be understaffed or may have more pressing organization issues. Within the school districts and schools that have allowed the study, teachers volunteer to take the survey, and these volunteers may be more altruistic, or more interested in research, or perhaps more driven by the incentives than their peers who did not take the survey.

These individuals are 263 third- and fourth-grade teachers from 111 different elementary schools with a wide range of racial compositions. The descriptive statistics for the survey participants and schools can be found in Table 3. Eighty-six percent is female. Two percent identify as Asian, 2% identify as Black, 2% identify as Native American, and 5% identify as other race, and 90% identify as white. Three percent identify as Latina/o or Hispanic (measured separately from race). By design, the school characteristics of the survey sample do not mirror those of the entire state, as can be seen by comparing the school characteristics in Table 3 to those in Table 1. The schools in the survey sample are, on average, 3.9% Asian as compared to 3.3% in the state; the survey schools are 17.8% black, while the state is 10.2%; the survey

schools are 16.4% Latino as compared to 8.5% in the state; and the survey sample schools are 1.8% Native American as compared to 2.0% in the state. The schools in the survey sample are 12.5% English Language Learners as compared to 6.3% in the state, and the survey schools have an average of 52.8% of their students qualifying for free or reduced lunch as compared to 41.1% of the state sample.

Outcome Measures: Rating and Ranking Likelihood of Interventions

After participants read each vignette, they rate and rank their perceived likelihood of providing each one of a set specific educational interventions to the fictional student. I designed this outcome measure so that teachers were unaware that exceptionality testing was the main outcome of interest, as I wanted to determine whether they would refer to testing in the real world, where many possible interventions are possible. Therefore, I used existing state pre-referral documents to design a list of typical interventions used for struggling students, including the outcomes of interest, "refer student to struggling student support team, RTI (response to intervention), or special education testing," "refer student to gifted/talented testing," and "refer student to English as a Second Language services." Other interventions in the list were "use remedial materials," "provide extra time for assignments," "shorten assignments," "reduce the difficulty of assignments," "provide incentives for good work and/or behavior," "use small group or one-on-one instruction during regular class time," "use peer tutoring or support," "refer student to school counselor," "refer student to school psychologist," "recommend or provide one-on-one tutoring during lunch, recess, or before/after school," "create environmental changes, such as seating," "talk to the student's parent/guardian," and "other" with the option to write in a text response.

For each intervention, participants were asked to rate "how likely you would be to provide the following supports for [student name]" on a six-point scale including "not at all likely" "a little likely," "somewhat likely," "quite likely," "very likely," and "extremely likely." Participants then rank their top five choices of intervention in order of their likelihood of using the intervention.

I validated the outcome by conducting three focus groups with third- and fourth-grade teachers in two Wisconsin elementary schools. They reviewed the list of interventions and suggested additional interventions and wording edits.

The descriptive statistics for the outcomes can be found in Table 4. On a scale of 1 to 6, with 1 being "not at all likely" and 6 being "extremely likely" to use the intervention, the mean rating for referral to special education pre-referral was 4.415 with a standard deviation of 1.478. The mean rating for referral to gifted/talented testing was 1.710 with a standard deviation of 1.044, and the mean rating for referral to English as a Second Language services was 2.424 with a standard deviation of 1.796. The remaining thirteen interventions ranged from 2.926, for "refer student to school psychologist," to 5.183, for "talk to the student's parent/guardian."

For the ranking outcome, in which teachers selected their top five interventions from the list above and ranked them according to their perceived likelihood of providing them, ranged from 0.068, for "refer to gifted/talented testing" (standard deviation of 0.510), to 1.902, for "refer student to struggling student support team, RTI (response to intervention), or special education testing" (standard deviation of 2.030). Referring a child to services for English Language Learners had a mean ranking of 0.445 (standard deviation of 1.168).

Missing data. Because the survey software requires responses to all outcome measures in order for the participant to be allowed to proceed with the survey, there are no missing outcome

measures for the vignettes. Six teachers declined to complete the portion of the survey that asks about their racial/ethnic background, gender, and teaching experience. These data are not utilized in any analyses, but they are missing from the descriptive statistics.

ANALYTIC DESIGNS

All of the analyses in the dissertation are conducted in Stata. Full details of the analyses are included in each empirical chapter.

In Chapter 3, I estimate the main effects of the randomized factors in the vignettes, race/ethnicity, nativity, and gender, on teachers' rating and ranking of referral to special education pre-referral processes, gifted testing, and ESL services. Ordered logistic regressions are used, as they capture the ordered nature of the response scale, and standard errors are clustered at the teacher level.

In Chapter 4, the state education data are used to examine whether and how school racial/ethnic composition moderates the relationship between student race/ethnicity and disability status. I include student-, school-, and cross-level interaction variables to predict placement in special education of any type, as well as identification with Intellectual Disability, Emotional Disorder, Specific Learning Disability, Other Health Impairment, and Autism through a series of mixed effects logistic regression models.

In Chapter 5, the two datasets are merged together, and the experimental effects from the factorial vignette survey are tested for moderation by school racial/ethnic composition. The school proportion of white students is included as an interaction with the randomized factors in ordered logistic regressions, estimating both the rating and ranking outcomes. Random effects are specified for the school level. Because the analyses in this chapter estimate each disability

category separately, and each participant responded to vignettes with two different disability symptom descriptions, it was not necessary to account for any clustering at the teacher level.

Table 1. Descriptive Statistics, State Data

Student Level	N	Mean	Standard Dev
Male	895,791	0.516	0.500
Asian	895,791	0.040	0.196
Black	895,791	0.113	0.316
Latino	895,791	0.095	0.293
Native American	895,791	0.017	0.128
English Language Learner	895,791	0.074	0.262
Free and reduced lunch	895,791	0.391	0.488
Attendance (mean centered)	895,791	0.000	8.530
Transferred in the last year	895,791	0.032	0.177
Reading proficiency level	429,725	3.230	0.841
Math proficiency level	429,725	3.012	0.966
Disability status			
Any disability	895,791	0.150	0.357
Autism	895,791	0.010	0.100
Emotional Disorder	895,791	0.016	0.127
Intellectual Disability	895,791	0.011	0.106
Other Health Impairment	895,791	0.023	0.151
Specific Learning Disability	895,791	0.044	0.204
Speech Language Impairment	895,791	0.038	0.191
School Level			
Proportion Asian	2,214	0.033	0.550
Proportion black	2,214	0.102	0.209
Proportion Latino	2,214	0.085	0.130
Proportion Native American	2,214	0.020	0.069
Proportion English Language Learner	2,214	0.063	0.097
Proportion free and reduced lunch	2,214	0.411	0.235
Average attendance (mean centered)	2,214	0.000	0.059
Proportion transferred in last year	2,214	0.049	0.100
Average reading proficiency level	2,214	3.174	0.378
Average math proficiency level	2,214	2.935	0.443
Proportion teachers of color	2,214	0.044	0.108
Proportion teachers with master's degrees	2,214	0.514	0.193
Proportion teachers with 5 or more years of experience	2,214	0.831	0.120
Proportion bilingual teachers	2,214	0.006	0.032
Proportion with any disability	2,214	0.158	0.104
Proportion Autism	2,214	0.010	0.012
Proportion Emotional Disorder	2,214	0.020	0.053
Proportion Intellectual Disability	2,214	0.010	0.017
Proportion Other Health Impairment	2,214	0.022	0.030
Proportion Specific Learning Disability	2,214	0.043	0.043
Proportion Speech Language Impairment	2,214	0.044	0.054

Table 2. Factorial Vignette Survey Structure

Randomized factors
Race/ethnicity and nativity
Black
Latino/a immigrant family
Latino/a non-immigrant family
White
Gender
Female
Male
Exceptionality "symptoms"
Mild academic challenges
Mild behavior challenges & high academic skills
Moderate behavior challenges & low-average academic skills
Controlled Factors
Socioeconomic status
Low income
Parent-teacher interaction history
Caring but limited resources to be involved
Age/grade range
3rd and 4th grade

Table 3. Descriptive Statistics: Experimental Survey Sample

Variable Description	Measurement	N	Mean	Std. D.
Teacher Characteristics				
Respondent is Male	0 = no, 1 = yes	263	0.137	0.344
Respondent is Hispanic or Latino	0 = no, 1 = yes	265	0.034	0.181
Respondent is Asian	0 = no, 1 = yes	265	0.015	0.122
Respondent is Black	0 = no, 1 = yes	265	0.023	0.149
Respondent is Native American	0 = no, 1 = yes	265	0.015	0.122
Respondent is White	0 = no, 1 = yes	265	0.902	0.298
Respondent is Other Race	0 = no, 1 = yes	265	0.045	0.208
Years teaching	1 = this is my first year, 2 = 1 year, 3 = 2 years, 4 = 3 years, 5 = 4 years, 6 = 5 years, 7 = 6 years or more	266	6.101	1.738
School Characteristics				
Proportion Asian		111	0.039	0.064
Proportion black		111	0.178	0.263
Proportion Latino		111	0.164	0.196
Proportion Native American		111	0.018	0.091
Proportion white		111	0.601	0.325
Proportion English Language Learners		111	0.125	0.156
Proportion free-or-reduced-lunch		111	0.528	0.276
Proportion proficient in reading		111	0.727	0.159
Proportion proficient in math		111	0.787	0.133

Table 4. Descriptive Statistics: Experimental Survey Variables

Variable Description	Measurement	N	Mean	Std. D.
Self-reported likelihood of providing intervention	1 = not at all likely, 2 = a little likely, 3 = somewhat likely, 4 = quite likely, 5 = very likely, 6 = extremely likely			
Use remedial materials		542	3.768	1.450
Provide extra time for assignments		542	4.096	1.341
Shorten assignments		542	3.858	1.401
Reducethe difficulty of assignments		542	3.478	1.402
Provide incentives for good work and/or behavior		542	4.507	1.381
Use small group or one-on-one instruction during regular class time		542	5.114	1.068
Use peer tutoring or support		542	4.260	1.349
Refer student to struggling student support team, RTI (response to intervention), or special education testing		542	4.415	1.478
Refer student to school counselor		542	3.821	1.579
Refer student to school psychologist		542	2.926	1.563
Refer student to gifted/talented testing		542	1.710	1.044
Refer student to English as a Second Language services		542	2.424	1.796
Recommend or provide one-on-one tutoring during lunch, recess, or before/after school		542	4.242	1.444
Create environmental changes, such as seating		542	4.812	1.270
Talk to the student's parent/guardian		542	5.183	1.038
Other		542	3.033	2.240
Five interventions most likely to provide, ranked in order of how likely to provide them	0 = not listed; 1-5: ranked interventions, 1 as most likely			
Use remedial materials		542	0.867	1.433
Provide extra time for assignments		542	1.101	1.625
Shorten assignments		542	0.945	1.626
Reduce the difficulty of assignments		542	0.806	1.511
Provide incentives for good work and/or behavior		542	1.402	1.780
Use small group or one-on-one instruction during regular class time		542	1.690	1.377
Use peer tutoring or support		542	0.913	1.634
Refer student to struggling student support team, RTI (response to intervention), or special education testing		542	1.902	2.030
Refer student to school counselor		542	0.742	1.482
Refer student to school psychologist		542	0.205	0.888
Refer student to gifted/talented testing		542	0.068	0.510
Refer student to English as a Second Language services		542	0.445	1.168
Recommend or provide one-on-one tutoring during lunch, recess, or before/after school		542	1.207	1.801
Create environmental changes, such as seating		542	1.135	1.739
Talk to the student's parent/guardian		542	1.192	1.810
Other		542	0.090	0.541
Student characteristics indicated in vignette	0 = no, 1 = yes			
Black		542	0.275	0.447
Latino, immigrant family		542	0.234	0.424
Latino, non-immigrant family		542	0.240	0.427
White		542	0.251	0.434
Male		542	0.494	0.500
Mild academic challenges		542	0.341	0.475
Mild behavior challenges & high academic skills		542	0.319	0.467
Moderate behavior challenges & low-average academic skills		542	0.339	0.474

Example Vignette

Please read the following case study of a student, imagining that the student is in your current classroom. After reading the vignette, you will be asked questions about how you would support this student.

[redacted] is a student in your current classroom. She has always had good attendance, and was promoted with marginally satisfactory grades in every grade level prior to this year. Her kindergarten teacher reports that she did not attend pre-kindergarten, and that she struggled with many classroom skills, both behaviorally and academically. While she has learned many skills since then, every teacher she's had reports that [redacted] has trailed behind her classmates. Her grandmother, who takes care of her, has met with you once about her performance, but she is difficult to get in touch with, as her phone service is often cut off. She is concerned about [redacted]'s progress, but seems to have low reading skills herself and may struggle to help her with her work.

This week, like many weeks, [redacted] had difficulty in reading and writing class. When you asked her to read from the basal reader aloud, her fluency was significantly slower than that of the rest of the class, and she decoded about 20% of the multisyllabic words incorrectly. For independent reading, she brought home a book at her level (about 1.5 grade levels below your class's average reading level), and had a week to read it. When you tested her on comprehension, she remembered about 50% of the plot and character information.

In writing class this week, like many weeks, she had difficulty with sentence structure and paragraph organization, but was able to write appropriate sentences when receiving one-to-one instruction. In a class-wide spelling bee, she took about 15 seconds to respond on her turns. When she answered incorrectly, she angrily exclaimed that she didn't care about the spelling bee. On the spelling test, she scored a 50%. In general, [redacted]'s writing is about 1.5 grade levels below your class' average.

In math class this week, like most weeks, [redacted] did better than in reading and writing class. During math computation speed drills, she did not finish as many problems as the rest of her peers, but among the problems she completed, she was about 90% correct. Your math lessons this week included the use of manipulatives, which helped her learn the material along with her peers. When she needed to apply the concepts to word problems, however, she struggled and required more help from you.

[redacted]'s favorite class is music, where she has been able to keep up with the class and has little to no behavior problems. [redacted] generally gets along with her peers during physical education and during structured games on the playground, but she seems to have few friends outside of those activities.

Chapter 3

Labeling Boys Bad: Experimental Evidence of Race/Ethnicity and Gender Effects on Teachers' Interventions

Labeling Boys Bad:
Experimental Evidence of Race/Ethnicity and Gender Effects on Teachers' Interventions

In a typical classroom, a teacher encounters a wide range of abilities, skills, and behaviors. About 20% of these students are considered far enough from "typical" to be placed in special education and gifted programming (Callahan, Moon, & Oh, 2014; US Department of Education, 2010a). Teachers play an important role in identifying students with exceptionalities, but their decision-making processes about whom they refer for testing is not well understood. When they observe low academic skills, high academic skills, or misbehavior, why are some students suspected of and categorized as having neurophysiological differences, resulting in referrals, while others are seen as typically performing? How do teachers decide that particular students are capable of higher performance than is observed, and how do they decide that particular students' behaviors are sufficiently dangerous to warrant specialized programming and exclusion from the general education classroom?

Because students of color are overrepresented in disability categories, scholars, policy-makers, and practitioners often assume that racial/ethnic bias plays a role in teachers' decisions to refer students to exceptionality testing. However, existing research on racial/ethnic disproportionality in special education has not clearly identified this bias; indeed, recent research has called into question whether students of color are overrepresented in exceptionality categories at all, once correlates of race/ethnicity are taken into account. These competing explanations for the racial/ethnic disparities have important, diverging implications: if confounders of race/ethnicity explain the differences in exceptionalities, then special and gifted education programs are merely responding to existing racial/ethnic inequalities; if racial/ethnic bias plays a role, then schools are placing students in inappropriate educational programming.

While these special and gifted education services likely provide additional supports for student success in school, exceptionality labels and services can also stigmatize students, isolate them from their peers, and alter teachers' expectations (Dudley-Marling, 2004; Gillung & Rucker, 1977; Morgan, Frisco, Farkas, & Hibel, 2010; Shifrer, Callahan, & Muller, 2013).

I seek to understand how teachers' interpretations of student abilities, skills, and behaviors are affected by student race/ethnicity and gender, with implications for understanding the nature of racial/ethnic disproportionality in special education. I use an experimental design to test whether teachers' perceptions of students' race/ethnicity, nativity, and gender affects their decisions to refer them to exceptionality testing. My findings suggest that boys of color are more likely to be suspected when they exhibit behavioral challenges. My findings suggest that the racialized construction of exceptionalities may maintain or exacerbate racial/ethnic inequalities in education.

POSSIBLE RACE/ETHNICITY EFFECTS IN EXCEPTIONALITY IDENTIFICATION

The research on racial/ethnic disproportionality in special education has long argued that educators are racially biased in their decisions to classify students of color with disabilities at higher rates than their white peers. This may occur through racial/ethnic bias in teachers' decision making (Hosp & Reschly, 2004), psychometric test bias (McLeskey et al., 1990), school psychologists' uses and interpretations of the tests (Mehan et al., 1986), differential parent advocacy for or against exceptionality labels (Ong-Dean, 2009), and institutional or parental preferences for one disability over another (Roedell, 1984; Sleeter 1987; Liu et al., 2010). However, evidence of racially/ethnically biased school processes has been inconclusive (McLeskey, Waldron, & Wornhoff 1990; Donovan & Cross 2002; Hosp & Reschly 2004).

In contrast, recent research, using more rigorous methods and richer data sets, has found that once appropriate covariates, such as socioeconomic status and skills at school entry, are taken into account, students of color are actually less likely than their white peers to be placed in special education (Hibel et al., 2010; Morgan et al., 2012; 2015; Shifrer et al., 2011). In these articles and in a recent opinion piece in the New York Times (Morgan & Farkas, 2015), these authors argue that the findings negate the possibility that educators are racially biased in special education placements. These observational studies are limited in their ability to answer whether and how student race/ethnicity affects identification of disability and giftedness. Any number of unobserved factors may confound estimates of the effect of race/ethnicity, socioeconomic status, and other factors on placement in special education and gifted services. The population of students that are identified with exceptionalities is likely qualitatively different from the population that is considered "typical," and likely in ways that are not fully measurable with state test scores, free-and-reduced lunch status, and other typical control variables. Additionally, the effects of race/ethnicity may vary depending on the type of exceptionality, particularly for behavioral versus academic challenges, yet these studies are only able to explore such variation for three categories: specific learning disability, speech-language impairment, and intellectual disability. Finally, while skills at Kindergarten entry or in earlier grades explain much of the variation by race/ethnicity in special education placement (Hibel, Farkas, & Morgan 2010; Morgan, et al. 2012; Shifrer et al. 2011), these measures of academic and behavioral performance are subject to the same possible effects of racial/ethnic discrimination.[4] In sum, the

[4] In the studies using the Early Childhood Longitudinal Study (Hibel, et al. 2010; Morgan, et al. 2012), the academic tests are administered one-on-one by assessors, and the behavioral measures derive from teacher rating scales (NCES 2014). In the research using the Educational Longitudinal Study, academic history is taken into account using grade retention (Shifrer et al.

existing research cannot answer whether student race/ethnicity affects school staff members' decisions to place students in special and gifted education.

Racial/Ethnic Inequalities within the Identification Process: The Case for Teacher Decisions

Where, in the extensive, rule-driven exceptionality identification process (outlined in the Introduction), might racial/ethnic bias matter? Teacher referrals, which are inherently subjective, have the potential to be uniquely powerful. While children may be referred to pre-referral procedures and testing by any adult, 75% of referrals originate from teachers (Lloyd, Kauffman, Landrum, & Roe, 1991); even in cases of parental and health professional referrals, teachers influence these decisions by suggesting and pressuring for diagnosis (Brinkman et al., 2009; Cormier, 2012; Sax, 2003). Teachers' referrals are generally confirmed: between 73 and 90% of students referred to pre-referral and/or testing by their teachers will be found to have an exceptionality (Harry & Klingner, 2007). Research shows that pre-referral processes play little of their intended role of special education placement prevention (Klingner & Harry, 2006), and the subsequent psycho-educational testing may involve test after test in pursuit of "finding" a "hidden disability" (Mehan et al., 1986). Following these procedures, at official qualification meetings, teachers' informal diagnoses of student needs affect the school psychologists' recommendations (Klingner & Harry, 2006). Because teachers have usually spent extended periods of time working with a student, and because they have expertise in and experience with instruction and learning, their referrals and informal diagnoses are likely often accurate. Yet it also appears that a teacher's suspicion of exceptionality triggers institutional processes that confirm their suspicions, not only about *whether* a child has an exceptionality, but also *which* exceptionality label is assigned.

2011), which also may be affected by racial/ethnic bias or racially/ethnically varying quality of educational experiences.

Race/ethnicity and gender effects in teachers' perceptions of students. Despite the evidence that teachers are "more racially tolerant than the majority of Americans" (Lacy & Middleton, 1981), the literature indicates that their perceptions and treatment of students differs by student race/ethnicity and gender. Teachers hold higher academic expectations for and perceptions of white and Asian American students than they do for Latino or black students (Downey & Pribesh, 2004; McKown & Weinstein, 2002; 2008; Tenenbaum & Ruck, 2007). Some of these differences are likely due to statistical discrimination, in which teachers hold lower expectations for black students than white students because they see the well-documented lower achievement levels for this group of students (Ferguson, 2003). Yet teachers also appear to perceive students' abilities and motivations differently in ways that align with racist stereotypes. White high ability is seen as natural, while Asian American high ability is perceived as the product of parental pressure, and black and Latino high ability is questioned and made invisible (Staiger, 2004). Teachers may conflate whiteness with higher socioeconomic status and higher academic ability (Morris, 2005). Meanwhile, teachers perceive black and Latino students' behavior as more problematic than their white peers. This may be due to variation in the value assigned to black and white students' "cultural ethos" in the classroom (Neal, McCray, Webb-Johnson, & Bridgest, 2003; Rowley et al., 2014; Tyler & Boykin, 2006), or to differences in teachers' interpretations of intentionality of misbehavior and motivation (Ferguson 2001; Suarez-Orozco, et al. 2008).

The intersection of race/ethnicity and gender also reveals complex differences in how teachers perceive and develop expectations about students. Some research finds that girls of color experience the "double disadvantage" of being a racial/ethnic minority and female. Stereotypes of boys having a higher level of innate math and science ability, for instance, only

applies to white boys, while girls of color are subject both to the stereotype of math as less feminine as well as racial stereotypes of lower intellectual ability (Brown & Leaper, 2010; Riegle-Crumb & Humphries, 2012). Yet other research demonstrates that the intersection of race/ethnicity and gender is more complex, with boys of color being perceived as particularly troubled. Black and Latino boys are perceived as aggressive, disobedient, lazy, and disruptive (Ferguson, 2001; López, 2002; Roderick, 2003; Rowley et al., 2014). When boys of color engage in the same misbehaviors as their white peers, they are perceived as more intentional and aggressive, and they receive harsher discipline for the same infractions (Ferguson, 2001; Skiba, Michael, Nardo, & Peterson, 2002). Boys of color report more negative messages from teachers and other school staff about their academic potential (López, 2003). How might these disparities in teachers' expectations, perceptions, and treatment manifest in their decisions to refer children to pre-referral processes and exceptionality testing?

Race/ethnicity and gender effects in teachers' perceptions of exceptionalities. Because having a disability suggests lower ability, achievement, and/or worse behavior, it might be tempting to think of referrals for disability testing simply as a negative referral, one that might reflect generally negative perceptions of students of color; conversely, the logical assumption is that giftedness is seen as a positive attribute, with higher rates of referral for white students reflecting racial/ethnic bias against students of color. Yet, as is discussed in the Introduction, exceptionality categories vary in the level of stigma, level of resources, tendency to exclude or include in the general education classroom, and general level of advantage. Moreover, different exceptionality categories refer to different behaviors and academic strengths and challenges, which correspond to very different stereotypes by race/ethnicity and gender.

Teacher decisions to refer students to pre-referral/testing are supposed to be based on an objective observation of a discrepancy between the child's performance or ability and his age (Project IDEAL In Action), yet the perception of a discrepancy is "socially and historically constructed, not psychometrically derived" (Gerber, 2005). Researchers identify a range of explanations for why and how teachers develop the suspicion of exceptionalities. Some point to structural issues, in which teachers refer to disability testing because schools lack supports for heterogeneous populations (Christensen et al., 1986; Gerber & Semmel, 1984; Mamlin & Harris, 1998). Gerber (2005; Gerber & Semmel, 1984) developed a theoretical model of "instructional tolerance," in which teachers perceive a certain range of responsiveness to instruction as more "teachable," while students outside this range are in need of external supports, as teachers must balance students' demands for resources. Research supports this model with teachers deciding to refer students who are "standing out like sore thumbs," and when teachers are "not meeting the needs that they have," as teachers described in interviews (Mamlin & Harris, 1998; Morris, 2005). Finally, while researchers repeatedly find that teachers have genuine concern for and desire to help the students that they refer (Mamlin & Harris, 1998; Mehan et al., 1986), they often refer children that they perceive as having behaviors beyond their ability to control, often with the intention of removing these children from their classrooms (Gottlieb & Alter, 1994; Mamlin & Harris, 1998).

When a teacher has a student that is struggling academically or behaviorally, or a student who demonstrates potential giftedness, the teacher has a variety of possibly responses. He may see the student as within the expected range of "teachability," and therefore do nothing, or may attempt minor adjustments and interventions within the classroom. The teacher may,

alternatively, perceive the child as so far outside of that range that more supports or enrichment are necessary, resulting in the decision to refer the child for exceptionality pre-referral processes.

It is possible that the race/ethnicity and gender effects on teachers' perceptions and expectations, described above, also affect the way that a teacher categorizes students needs. Teachers hold lower expectations for children of color in general, which may mean that a struggling student of color would appear to be within the expected range of teachability, and therefore less likely to be referred. Meanwhile, boys of color are perceived more behaviorally problematic than their white and female peers, which may mean that teachers are more likely to categorize black and Latino boys with behavior problems as potentially having disabilities. Indeed, my previous research, in which I tested teachers' decisions to refer fictional students to special education testing, with race/ethnicity randomly assigned, supports both of these types of race/ethnicity effects on teachers' decisions to refer to special education testing (Fish 2012). Yet my previous work only examined effects for boys. It also could not properly estimate the effects for referral to gifted/talented testing, nor could it take into account the possibility that teachers might categorize Latino students as needing ELL services. In addition to addressing these limitations of the previous experiment, here I ask whether the previous results have any external validity, seeking to replicate the findings in a different context.

RESEARCH QUESTION AND DESIGN

I apply an experimental design – optimal for causal inference – to the question of whether teachers' perceptions of students' racial/ethnic backgrounds and genders causes differential referral rates to exceptionality testing. This study utilizes the data from the factorial vignette survey as described in Chapter 2. Differences in teachers' perceived likelihood of referring the student to special education pre-referral processes, gifted testing, and ESL services are tested

through ordered logistic regression. This model captures the ordered nature of the response scales. Each exceptionality category is estimated separately, with the remaining randomized factors, gender and race/ethnicity with nativity tested as interactive variables. I cluster the standard errors at the teacher level, as each teacher-participant read and responded to two vignettes.

RESULTS

How does perception of a student's race/ethnicity affect teachers' perceived likelihood of referral? Table 2 reports coefficients for the ordered logistic regression model on the ranking outcome for students demonstrating mild academic challenges, the skills and behaviors most consistent with Specific Learning Disability. There are no significant differences by gender, race/ethnicity, or the gender-race/ethnicity interactions.

Table 3 reports coefficients for the ordered logistic regression model on the ranking outcome for students demonstrating mild behavioral challenges and above average academic skills, the skills and behaviors most consistent with Giftedness, but also possibly perceived as Emotional Disorder. Here, again, there are no significant differences by gender, race/ethnicity, or the gender-race/ethnicity interactions. However, when teachers are asked whether they would refer these students to gifted/talented services or testing, race/ethnicity and gender effects become apparent. These results can be found in Table 4. Note that for the outcome of whether teachers refer the child to gifted/talented testing, I present the results for the outcome in which teachers rate their perceived likelihood rather than ranking their preferred interventions, as is presented for the other outcomes. This is because insufficient numbers of participants selecting gifted/talented referrals for their top five intervention choices to examine any meaningful variation. The low numbers of teachers that chose gifted for the ranking outcome is certainly

meaningful that few teachers were likely to refer to gifted/talented testing at all. In the absence of that data, however, I present the results of the rating outcome, which also reflects a measure of whether the teachers perceive the possibility of giftedness. In this outcome, while there are no main effects for race/ethnicity and gender, Latino boys, both those perceived as being from immigrant families and those perceived as being from non-immigrant families, are rated significantly lower in teachers' likelihood of referring to gifted/talented testing.

Table 5 presents the results for the ordered logistic regression model on the ranking outcome for students demonstrating moderate behavioral challenges and average academic skills, the skills and behaviors most consistent with Emotional Disorder. Here, race/ethnicity and gender effects become apparent. Vignettes inducing a perception of a black student were ranked marginally significantly lower than those inducing a perception of a white student. Teachers indicated a significantly greater likelihood of referring both black boys and Latino boys for special education, compared to the effects of being male or black or Latino alone. Whereas black Latino and Latino children of both genders, as well as boys, exhibited a reduced likelihood of special education referral compared to white females, the combination of black and male or non-immigrant Latino and male counteracted the reduced likelihood and pushed the rating in the opposite direction toward greater likelihood of special education testing.

Finally, Table 6 includes the results for the outcome of ranking referral to English as a Second Language (ESL) services. Unsurprisingly, the main effect of a vignette inducing a perception of a Latino from an immigrant family is an increased ranking. More surprising are the gender, ethnicity, and nativity effects for non-immigrant Latinos. The results indicate that non-immigrant Latino boys are marginally significantly more likely to be referred to ESL services; the lack of main effect for being a non-immigrant Latino reveals that among non-immigrant

Latinos, only boys experience this increase in likelihood of referral to ESL. Latino non-immigrant students displaying moderate behavior problems are more likely to be referred for ESL services than their peers. While Latino non-immigrant boys displaying minor behavior problems with high academic skills are less likely to be referred to ESL services, their female counterparts experience no such effect.

DISCUSSION

This study investigates the intersectional construction of exceptionality, race/ethnicity, nativity, and gender, asking how perceived student race/ethnicity affects teachers' decisions to refer students to special education and gifted testing. To address the limitations of observational data analyses in identifying causal relationships, I used a factorial vignette survey to conduct a randomized controlled trial. By isolating the causal relationship between perceived race and referral across different types of student challenges, my findings paint a more complex picture, with each exceptionality category having a different relationship (or lack of relationship) with race/ethnicity.

For students exhibiting academic challenges and for students exhibiting mild behavioral challenges with high academic ability, the results here appear to support the newer research on racial/ethnic disproportionality in special education challenges (Hibel et al., 2010; Morgan et al., 2015; Shifrer et al., 2011), as no evidence of race/ethnicity effects were found for this set of student challenges. This challenges the effects found in my previous research, which may be due to the very different school contexts and teacher populations between the previous research, which took place in a large, northeastern city, in which the public school population was a majority of students of color.

Yet for students exhibiting behavioral challenges, my results are more consistent with both my previous research and with the body of disproportionality literature that points to racial/ethnic bias in referrals, with black and non-immigrant Latino boys experiencing increased likelihood of referral as compared to their white and female peers. For this set of student skills and behaviors, a referral would indicate that the teacher perceives the student as having social, emotional, and/or behavioral skills that are lower than expected. Indeed, research indicates that children's behaviors are perceived differently by their teachers depending on race/ethnicity, as teachers rate non-white students more poorly on behavioral outcomes (Downey & Pribesh, 2004; Tenenbaum & Ruck, 2007), and perceive misbehavior by black boys as more aggressive, intentional, and problematic than misbehavior by white boys (Ferguson, 2001). I suspect that the decreased ranking for boys relative to girls is a product of my use of the same behavioral description. Teachers in my focus groups described boys as externalizing behaviors and girls internalizing, so the misbehavior described in the vignette would appear to be more abnormal for girls than for boys.

Finally, the race/ethnicity, nativity, and gender effects for Latinos are of great interest. Latino non-immigrant boys alone are perceived as more likely to need ESL when they display academic problems, while both Latino non-immigrant boys and girls are perceived as more likely to need ESL when they display moderate behavior problems, with similar directional effects, but no statistical significance, for mild behavior problems. Yet the gender-interaction with behavior problems for Latino non-immigrant students reveals that boys are actually much less likely than girls to be perceived as needing ESL services. Rather, recall that Latino non-immigrant boys displaying behavior problems are more likely to be perceived as requiring special education services, and less likely to be perceived as potentially gifted/talented than their peers. The

increased referrals of Latino boys who show no indication of being English Language Learners suggests racial/ethnic bias in teachers' categorization of Latino educational needs, yet curiously this only applies to boys. It appears that the girls are given more benefit of the doubt that the challenges might be due to lack of language proficiency, while boys are more likely to be perceived as having emotional disorder – when the two groups demonstrate the same challenges in the classroom. These results are consistent with qualitative research indicating that Latino boys are perceived as more behaviorally problematic than their white peers and Latino girls, but further research is needed to understand this interaction between race/ethnicity and gender.

The racialized construction of exceptionality. These differing perceptions by race/ethnicity, gender, and nativity drive differential suspicions of exceptionality, which, if confirmed by pre-referral and testing procedures in the real world, drive racialized constructions of disability and giftedness. For each type of exceptionality studied here -- learning disability, gifted/talented, and behavior disorder -- the perception of behaviors and skills must be seen as abnormal enough to be considered an exception, a medicalized label of difference. Both the perception of the skills or behaviors, and the perception of what is typical or expected for a student, are shaped by the teacher's perception of the student's race/ethnicity. Specifically, behavioral challenges are recognized as problematic enough for exceptionality testing primarily when non-white students exhibit them.

Implications. While students in special education have lower outcomes than their peers without exceptionalities (Wagner, et al. 2006), scholars remain unclear about whether these lower outcomes are attributable to selection differences or due to negative outcomes of special education services. Because students with exceptionalities are different from students without, likely in many unmeasured factors, this question plagues research on the effectiveness of special

education. Researchers investigating the effects of special education vary in the direction of the effects of these services (Hanushek, Kain, & Rivkin, 2002; Morgan et al., 2010; Shifrer et al., 2013). Therefore, it is difficult to interpret whether higher and lower referral rates by race/ethnicity are positive or negative for student outcomes.

My findings may also shed light on the inconsistent findings of the effects of special education. It is possible that the effects of special education and gifted services vary depending on the exceptionality label, with certain exceptionalities improving outcomes, and other exceptionalities negatively impacting outcomes. Emotional/behavioral disorder, in particular, suggests that a student has a chronic medicalized disorder of behavior problems; this exceptionality is more likely to be identified among students of color, who are then more likely to be excluded from the general education classroom (US Department of Education, 2010a).

Limitations. This study is not without its limitations. First, the use of the factorial vignette survey undoubtedly simplifies the complex processes of teachers' decisions to refer students. In the real world, such decisions are unlikely to be made immediately upon meeting a student, but rather, after a period of time observing and interacting with a student. The design used here, a factorial vignette survey, removes some of the complexities of human interaction over time. By asking teachers to imagine the student is in their current classroom, and by randomly assigning perceived race/ethnicity, however, my approach does isolate some effect of racial bias. These effects could be overestimated; for instance, if the factorial vignette survey picks up implicit racial/ethnic bias, then trained teachers in the real world may be able to reduce the effects of their bias on actual behavior (Correll et al., 2007). On the other hand, real-world interactions with students and their parents could further cement racial/ethnic bias by teachers, in which case the factorial vignette survey would underestimate the real-world effects of perceived race/ethnicity.

Participants might not imagine the fictional student is an additional student in their class, but rather, might base their decisions off of a similar student that they have taught; this may result in some of the confounding present in observational studies. Even with these limitations, if responses to the vignettes indicate racial bias to any significant extent, then the design will reveal that perceived race/ethnicity plays some causal role in the emergence of the perception of exceptionality.

Additionally, there are limitations to this study's external validity. Racial/ethnic disparities in special and gifted education vary across states, raising the concern that these patterns may only apply to the specific context of this project. The findings for students with behavior disorders match the findings from my previous research in New York City schools, suggesting that the findings are not limited to the Wisconsin context.

The sample includes more experienced teachers than is typical of teachers in the U.S. (National Center for Education Statistics, 2012), though teachers in the state of Wisconsin are more experienced in general, according to the state-wide data used in the next two chapters. The experience level of the teachers in the sample might mean that these participants made quicker judgments based on their extensive experience, perhaps increasing racial/ethnic and gender bias through less cautious decisions. Additionally, more experienced teachers likely completed their training less recently than their less experienced peers, so the sample may include fewer teachers who have taken newer coursework on multicultural education. This may have made my sample more likely to exhibit racial/ethnic bias in their responses.

A final concern to discuss in regard to possible limitations to the design is the experience of the sample with racial/ethnic diversity. Wisconsin's counties outside of a small number of cities have very small black populations. Teachers in such towns may have little to no experience

with black people, potentially reducing the validity of the names used to induce perceptions of black race/ethnicity. This is a small risk, however, as the names chosen are associated only with black people in popular culture.

Finally, this chapter does not address the role of school context. The next chapter will explore this possible factor in how teachers perceive the possibility of disability and giftedness.

Table 1. The Effects of Perceived Race/Ethnicity, Gender, and Nativity on Teachers' Ranking of Referral to Exceptionality Testing: Mild Academic Challenges

	Coef.	Robust Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.377	0.530	0.477
Latino, non-immigrant family	-0.175	0.563	0.755
Latino, immigrant family	0.090	0.499	0.857
Gender			
Male	0.396	0.454	0.383
Interactions			
Race/Ethnicity by Gender			
Black, male	-0.258	0.709	0.716
Latino, non-immigrant family, male	-0.229	0.785	0.770
Latino, immigrant family, male	-0.200	0.686	0.771

Table 2. The Effects of Perceived Race/Ethnicity, Gender, and Nativity on Teachers' Ranking of Referral to Exceptionality Testing: Mild Behavioral Challenges with Above Average Academic Skills

	Coef.	Robust Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.238	0.629	0.705
Latino, non-immigrant family	0.020	0.621	0.975
Latino, immigrant family	0.048	0.581	0.934
Gender			
Male	-0.332	0.621	0.593
Interactions			
Race/Ethnicity by Gender			
Black, male	0.682	0.861	0.429
Latino, non-immigrant family, male	0.276	0.861	0.748
Latino, immigrant family, male	-0.124	0.803	0.878

Table 3. The Effects of Perceived Race/Ethnicity, Gender, and Nativity on Teachers' Rating of Referral to Gifted/Talented Testing: Mild Behavioral Challenges with Above Average Academic Skills

	Coef.	Robust Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.189	0.662	0.776
Latino, non-immigrant family	0.924	0.664	0.164
Latino, immigrant family	0.534	0.618	0.387
Gender			
Male	0.850	0.645	0.188
Interactions			
Race/Ethnicity by Gender			
Black, male	-0.728	0.896	0.417
Latino, non-immigrant family, male	-2.045	0.898	0.023
Latino, immigrant family, male	-1.872	0.869	0.031

Table 4. The Effects of Perceived Race/Ethnicity, Gender, and Nativity on Teachers' Ranking of Referral to Exceptionality Testing: Moderate Behavioral Challenges and Average Academic Skills

	Coef.	Robust Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.927	0.535	0.083
Latino, non-immigrant family	-0.897	0.552	0.104
Latino, immigrant family	-0.681	0.574	0.235
Gender			
Male	-1.428	0.625	0.022
Interactions			
Race/Ethnicity by Gender			
Black, male	1.888	0.768	0.014
Latino, non-immigrant family, male	1.823	0.857	0.034
Latino, immigrant family, male	0.795	0.859	0.355

Table 5. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Skills/Behaviors on Teachers' Ranking of Referral to English as a Second Language Services

	Coef.	Robust Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.446	0.590	0.450
Latino, non-immigrant family	0.451	0.519	0.385
Latino, immigrant family	3.884	0.566	0.000
Gender			
Male	0.232	0.478	0.628
Skills and Behaviors (mild academic challenges comparison)			
Mild behavior challenges & high academic skills	-0.384	0.527	0.465
Moderate behavior challenges & average academic skills	-0.616	0.503	0.220
Interactions			
Race/Ethnicity by Gender			
Black, male	-0.472	0.846	0.577
Latino non-immigrant, male	1.480	0.754	0.050
Latino immigrant family, male	-0.372	0.771	0.630
Race/Ethnicity by Skills and Behaviors			
Black, mild behavior challenges & high academic skills	0.502	0.867	0.562
Black, moderate behavior challenges & average academic skills	0.743	0.805	0.356
Latino non-immigrant, mild behavior challenges & high academic skills	1.188	0.822	0.149
Latino non-immigrant, moderate behavior challenges & average academic skills	1.528	0.847	0.071
Latino immigrant family, mild behavior challenges & high academic skills	0.103	0.802	0.898
Latino immigrant, moderate behavior challenges & average academic skills	0.057	0.758	0.940
Gender by Skills and Behaviors			
Male, mild behavior challenges & high academic skills	-0.361	0.802	0.652
Male, moderate behavior challenges & average academic skills	-0.863	0.911	0.343
Race/Ethnicity by Gender by Skills/Behaviors			
Black, male, mild behavior challenges & high academic skills	-0.171	1.377	0.901
Black, male, moderate behavior challenges & average academic skills	-1.166	1.574	0.459
Latino non-immigrant, male, mild behavior challenges & high academic skills	-2.211	1.195	0.064
Latino non-immigrant, male, moderate behavior challenges & average academic skills	-0.346	1.226	0.778
Latino immigrant family, male, mild behavior challenges & high academic skills	0.012	1.125	0.991
Latino immigrant, male, moderate behavior challenges & average academic skills	0.578	1.224	0.637

Chapter 4

Where is the Disability?: The Role of School Context in the Relationship between Race/Ethnicity and Disability Category

Where is the Disability?: The Role of School Context in the Relationship between Race/Ethnicity and Disability Category

Even before special education services were universally available in public schools, researchers noticed that minority and lower-income students were overrepresented in special education classes (Dunn, 1968; Mercer, 1973). Today, black and Native American students outpace the disability rates of white, Latino, and Asian peers across categories of exceptionalities, with students identified as Native American at 14%, black at 13%, white at 9%, and Asian at 8%, with much greater disparities within categories of disability (Dunn, 1968; US Department of Education, 2006; Mercer, 1973). Inaccurate and inequitable special education placement is generally understood as problematic; while these services likely provide additional supports for student success in school, exceptionality labels and services may also negatively affect students through stigma, isolation from peers, and altered teachers' expectations (Dudley-Marling, 2004; Gillung & Rucker, 1977; Morgan et al., 2010; Shifrer et al., 2013).

Understanding the nature of these disparities and their causes has important implications for educational inequalities. In pursuit of this question, the literature has generally identified two explanations: 1) racial bias in educators' decisions and school processes or 2) confounders, such as poverty and other disadvantages that are associated with race/ethnicity, explain racial/ethnic differences. In the former explanation, special education services are inequitably and unfairly allocated to students by race/ethnicity; in the latter, schools are merely responding to existing racial/ethnic inequalities.

A growing literature has included school-level factors in their examination of potential confounders, with some finding that the racial/ethnic composition of the school explains a

significant portion of the variation in disability status by race/ethnicity, and others finding no effects of this factor (Hibel et al., 2010; Sullivan & Bal, 2013). Research on other educational outcomes indicates that the effect of racial/ethnic composition actually varies by individual-level student factors (Berends, Lucas, & Penaloza, 2008; Borman & Dowling, 2010; Condron, 2009; Mickelson, 2001). Yet few researchers have examined the role of school racial/ethnic composition as more than a mere confounder in the relationship between race/ethnicity and special education status.

In this chapter, I first seek to validate my conceptualization of disabilities as more-advantaged and less-advantaged. I then test whether and how the school racial/ethnic composition moderates the relationship between individual-race/ethnicity and placement in special education across the more subjective categories of disability. I find some support for my conceptualization of disability statuses. My results indicate that for white students, attending schools with more peers of color increases their placement in more-advantaged disabilities. For students of color, attending schools with more same-race peers decreases their placement in special education, excepting the outcome of Intellectual Disabilities. While the models without the cross-level interactions largely replicate the findings by recent sociological research that students of color are underrepresented in special education (Hibel et al., 2010), the inclusion of the interaction variables helps explain some of this underrepresentation. Moreover, the estimation of a larger set of disability outcomes reveals that black and Native American students have increased risk of Emotional Disorder even with potential confounders included in the model. These results support two hypothesized mechanisms: frog-pond effects driven by racial/ethnic bias, and racial competition.

SCHOOL RACIAL/ETHNIC CONTEXT AND THE ALLOCATION OF DISABILITY LABELS

A substantial body of literature has examined differential incidences by race/ethnicity, concluding that racial/ethnic bias drives minority overrepresentation (Coutinho et al., 2002; Harry & Klingner, 2007; Hosp & Reschly, 2004; Oswald et al., 1999; Skiba et al., 2005), while other research points to inequalities associated with race/ethnicity (Hibel et al., 2010; MacMillan & Reschly, 1998; Morgan et al., 2012; Shifrer et al., 2011). These scholars have identified several confounders that may explain the race/ethnicity gaps in disability status, notably socioeconomic inequality by race/ethnicity, skills at school entry, and school context. Yet other than a few district-level analyses that examine single disability categories, the possibility that the relation between student race/ethnicity and disability placement might vary according to school racial/ethnic composition has not been explored.

The disproportionality literature also tends to treat disability as a monolithic disadvantaged status, though some disproportionality scholars examine the potential for different categories to have differential statuses (Ong-Dean, 2006); Fish 2012; Shifrer & Fish 2014). Distinguishing between more-advantaged and less-advantaged categories of disability may be particularly helpful to understanding how disability and race/ethnicity are related, and how racial/ethnic disproportionality arises, depending on the mechanisms of the contextual effects. Indeed, a variety of possible mechanisms may explain the relationship between school context, race/ethnicity, and special education placement.

Universal effects of racial/ethnic composition. Schools with higher proportions of students of color tend to have fewer resources and less qualified teachers (Condron & Roscigno, 2003; Ingersoll, 1999; Lee & Burkam, 2002; Mickelson, Bottia, & Lambert, 2013) presumably

also affecting students' chances of being placed in special education. Schools with fewer students of color may perceive less need for special education services due to the higher quality education they tend to provide, resulting in lower likelihood of disability in schools with fewer students of color. Alternatively, those same schools may be better equipped to identify struggling students and provide interventions, perhaps increasing students' chances of receiving a disability label.

The few studies that have estimated the relationship between school racial/ethnic composition and individual students' likelihood of special education placement yielded findings that vary from no effect (Sullivan & Bal, 2013) to reduced chances of placement (Hibel et al., 2010). These studies include racial/ethnic composition of the school as a school-level covariate to help uncover the relationship between race/ethnicity and special education, operationalizing school context that affects all students' placement chances equally. Hibel and colleagues (2010) find that attending a school with higher levels of academic performance increases a student's chances of being labeled with a disability, and that schools with higher proportions of minorities are less likely to label students with disabilities. They attribute these contextual effects to frog-pond effects (discussed more below), and to the lack of resources that tend to be available for intervention and referral in high-minority schools.

Individual Variation in the Effects of School Racial/Ethnic Composition

The research above suggests that racial/ethnic and gender disparities in special education placement may be partially driven by the schools that students of different racial/ethnic backgrounds attend, with these schools having different propensities to identify exceptionalities. Yet education research indicates that school racial/ethnic composition has differential effects for students of difference racial/ethnic backgrounds. While not without counter-evidence, extensive

research demonstrates that the racial/ethnic composition of the school moderates the relationship between race/ethnicity and track placement (Braddock, 1990; Lucas & Beresford, 2010; Lucas & Berends, 2002; 2007; Oakes, 2005), which affects student outcomes (Gamoran, 1989; Oakes, 2005; Pallas, Entwisle, Alexander, & Stluka, 1994), suggesting that the racial/ethnic composition of the school shapes how resources are allocated and how students are sorted. More broadly, school racial/ethnic composition is associated with racial/ethnic disparities in educational outcomes, as well as for disparities by gender and race/ethnicity (Borman & Dowling, 2010; Hanushek & Woßmann, 2006; Mickelson et al., 2013; Southworth, 2010; Southworth & Mickelson, 2007; Vigdor & Ludwig, 2007). This suggests the possibility of a similar explanation for racial/ethnic inequalities in special education placement, simultaneously a resource allocated to students, while also a sorting mechanism, as I discuss in Chapter 1. Indeed, scholars have found that school district-level disproportionality is predicted by racial/ethnic composition of the district (Eitle, 2002; Hosp & Reschly, 2004; Oswald et al., 1999; Serwatka, Deering, & Grant, 1995). Beyond schools' overall differences in special education placement that affect all students in the school, how might school racial/ethnic context differentially affect students' chances of being identified with exceptionalities?

Social-psychological effects. Theory and empirical studies suggest that the racial/ethnic composition of schools affect the psychological well-being of students of color, potentially affecting their risk of exceptionality identification. While oppositional culture theory (Fordham & Ogbu, 1986; Ogbu, 1978) posits that students of color in high-minority schools experience social pressure to resist schooling, which would likely increase disability placements for low academic achievement and oppositional behavior, this theory has largely been discredited (Ainsworth-Darnell & Downey, 1998; Downey, Ainsworth, & Qian, 2009; Harris, 2006; Harris

& Robinson, 2007; Tyson, Darity, & Castellino, 2005). Rather, it is possible that schools with higher proportions of students of color have better social-psychological effects for students of color, reducing their risk of placement in special education. Stereotype threat (Steele, 1997; Steele & Aronson, 1995), in which a person's performance is negatively impacted by their fear of confirming a negative stereotype, is intensified by greater presence of groups to whom the stereotype does not apply (Inzlicht & Ben-Zeev, 2000). In schools with greater non-white racial/ethnic compositions, students of color have more positive academic orientations and school attachment (Goldsmith, 2004; Johnson, Crosnoe, & Elder, 2001; Tyson et al., 2005), they have lower senses of social isolation (Tyson et al., 2005), and they are likely have a greater sense of collective racial/ethnic struggle, increasing their engagement with school and motivation (O'Connor, 1997), all of which likely protect students of color from exhibiting the kinds of problems that result in disability identification.

Frog-pond effects. Originally theorized as a social-psychological mechanism, frog-pond effects posit that students develop self-concepts about their abilities by comparing themselves to their classmates (Davis, 1966). The concept has broadened over time, including others' views of students, rather than just students' views of themselves. Research relying on a frog-pond framework shows that institutional gate-keepers are subject to the effects of school context, such as college admissions officers, who judge similar students more positively when they stand out more against lower-performing peers (Attewell, 2001; Espenshade, Hale, & Chung, 2005). Further expanding the concept, scholars show that school staff evaluate students' abilities and achievement relative to their peers (Crosnoe, 2009; Powell, 1985). Under these conceptualizations of frog-pond effects, students in schools with more students of color, which tend to have lower average levels of academic performance (Lee & Burkam, 2002; Mickelson et

al., 2013), would stand out less when they struggle academically and behaviorally. As the identification of differences, in particular for exceptionalities, is a comparative process (Artiles, 1998; Artiles & Bal, 2008; Minow, 1991; Thomas & Davis, 1997), any struggling students in lower-performing schools would be less likely to be identified with exceptionalities. Current research supports this notion: schools with higher levels of academic performance and fewer behavior problems have increased rates of special education placement, and schools with high minority student enrollments are less likely to place students in special education (Hibel et al., 2010).

Racial-bias-driven frog-pond effects. Frog-pond effects on special education placement may go beyond a simple comparison of students' actual achievement and behavior within a school. Crosnoe (2009) argues that "frog pond effects are likely to occur in schools where resources are finite and people have to find ways to make decisions about who gets a resource," and further, that it is not the achievement itself that matters, but rather the "demographic statuses linked to achievement [that act as] the trigger for the comparison processes." Building on this idea, I expand the notion of frog-pond effects to include racial/ethnic biases of teachers, which may affect how suspicion of exceptionality arises. As I describe in Chapters 1 (introduction) and 4 (main experimental effects), teachers suspect a disability, and therefore refer students to testing, when the student's achievement and/or behavior is perceived as problematically far enough from the teacher's expectations for that student, which is shaped by the student's racial/ethnic background. I propose that this perceived disparity is also shaped by the racial/ethnic composition of the school, so that students who are surrounded by fewer same-race peers are more likely to be perceived as having a problematic difference in academic ability, achievement, and behavior that necessitates qualification with an exceptionality.

As I demonstrate in Chapters 1 and 3 and in Fish (2012), white students, especially white boys, are more likely to be suspected of disabilities when they demonstrate academic challenges, being labeled with categories of disability with higher status: Other Health Impairment (most commonly ADHD), Speech-Language Disorder, Autism, and to some degree, Specific Learning Disability. When these students are surrounded by more students of color, teachers' racialized expectations for them – and their peers to whom they are compared – may be enhanced, such that white students are incorrectly seen as higher socioeconomic status and more academically capable (E. W. Morris, 2005). In this case, these students are seen as falling below the high expectations their teachers have for them, making them more likely to be identified with a disability.

Also as I demonstrate in Chapters 1 and 4 and in Fish (2012), students of color, especially boys of color, are more likely to be suspected of disabilities when they exhibit behavioral problems. They are at higher risk of being identified with less-advantaged disabilities: Emotional-Behavioral Disorder and Cognitive Disability. This, too, may be enhanced when they are surrounded by fewer same-race peers, as their perceived behaviors appear more problematic in comparison to the perceptions of their white peers' behaviors. Research shows that teacher perceptions of "normal" behavior varies across schools, and that the composition of the class and school affect teacher judgments of acceptable behavior (Banks, Shevlin, & McCoy, 2012; Thomas & Davis, 1997).

Racial/ethnic conflict and competition. The final mechanism of racial/ethnic composition's effects on racial/ethnic disparities to be considered here is that of racial/ethnic conflict and competition. Recall from Chapter 1 that special education is both a resource to be allocated, particularly in the case of more advantaged categories of disability, and also a form of

tracking, particularly for less advantaged categories. Within the school and classroom context, resources, such as attention from and time with teachers, are limited. Additionally, the number of students who can be thought of as high achievers, is at a scarcity, as it is inherently comparative (Crosnoe, 2009). In the context of racially/ethnically diverse schools and classrooms, competition over these limited resources may take on a racial/ethnic character, as white families perceive students of color as a threat to their own students' success (Blalock, 1967; Blumer, 1958; Bobo, 1983; Quillian, 1995). Research shows that increased minority population size worsens dominant groups' attitudes toward minority groups, increasing their perceptions of threat, and increasing more hostile, punitive, and exclusionary attitudes (Bobo, 1983; King & Wheelock, 2007; Quillian, 1995; Quillian & Pager, 2001). In the realm of educational resources, white families have reacted to increasing contact with students of color by opposing desegregation and through white flight to suburban districts, as well as to private and charter schools (An & Gamoran, 2009; Bobo, 1983; Fiel, 2013; James, 1989; Logan, Oakley, & Stowell, 2008; Renzulli & Evans, 2005; Van Hook & Snyder, 2007).

In the context of desegregation and increased racial/ethnic diversity, racial competition may also help explain the allocation of resources within a school, as well as within-school sorting of students to tracks and exclusion of students of color. Tracking in particular has been identified as a politicized mechanism of resegregation, with increased racial/ethnic diversity predicting more differentiated tracking systems and racial/ethnic segregation across tracks and ability groups (Braddock, 1990; Lucas & Beresford, 2010; Lucas & Berends, 2002; Mickelson, 2001; Oakes, 1985). Scholars have argued that special and gifted education play similar roles, as schools dealt with diversity by race/ethnicity, socioeconomic status, and school readiness while

being required to provide more inclusive, universal public education (McCall & Skrtic, 2009; Skrtic, 2005; Sleeter, 1987; Staiger, 2004).

Resegregation through within-school sorting is thought to arise due to pressure from advantaged parents, who hoard opportunities (Tilly, 1999) by influencing the course selection decisions for their own children (Useem, 1992), as well as through pressure on school staff to maintain tracking structures and provide beneficial programs for more advantaged children (McGrath & Kuriloff, 1999; Noguera, 2001; Wells & Serna, 1996). Qualitative research shows that because these white parents associate race/ethnicity with achievement and intelligence, they seek to separate their own children from children of color (McGrath & Kuriloff, 1999; Staiger, 2004; Wells & Serna, 1996). However, quantitative analysis suggests that while this type of opportunity hoarding may occur, broader patterns of within-school stratification are more consistent with technical-functional theories of tracking, in which students are sorted based on actual ability and achievement rather than through opportunity hoarding (Kelly & Price, 2011).

For the case of exceptionalities, in which the students exhibit more extreme differences from average, racial competition may be a particularly salient theory to explain sorting into special education programs. In schools with racially/ethnically diverse populations, students of color are more likely to be in lower tracks, ability groups, and in special education (Losen & Orfield, 2002; Lucas & Berends, 2002; Oakes, 1985). White families in such schools, who seek to avoid placement in these higher-proportion minority classrooms and groupings, may advocate for a more advantaged disability label (Other Health Impairment, which is most frequently ADHD/ADD, Autism, Specific Learning Disability, and to a lesser extent, Specific Learning Disability). The diagnosis provides accommodations, extra attention from teachers, and a reduction of the stigma of low performance, supporting the child's success within the higher-

level tracks and groups. Identification with more advantaged categories of disability keeps children in the general education classroom rather than placing them in a segregated special education class (US Department of Education, 2010a), which white parents may avoid due to their higher proportions of students of color (Losen & Welner, 2001; Renzulli & Evans, 2005).

In the case of schools with lower proportions of children of color, racial competition may manifest as pressure on school staff to label and subsequently exclude students of color with less advantaged categories of disability (Emotional-Behavioral Disorder and Cognitive Disability), who may be more likely to be seen as disruptive, problematic, and taking the teacher's attention and time away from other students in the class. Indeed, Eitle (2002) argues that the racial/ethnic politics of a school shape the placement of students into special education, demonstrating that court orders to desegregate and histories of de jure segregation are correlated with black students being labeled with mild intellectual disabilities. She also finds that when school districts are more than 50% black in student population, fewer black students are labeled with intellectual disabilities, while the opposite patter exists in school districts with 50% or fewer black students enrolled. She argues that in districts with sufficient black student populations, the families have more political power to prevent their children from being labeled with this disability. Her findings beg the questions, what might these patterns look like at the school- and individual-level, rather than the district, and how might they vary for other types of disability categories – particularly ones that have higher statuses?

RESEARCH QUESTIONS

The existing literature on the disproportionate placement of students of color into special education has identified racial/ethnic composition of schools as a possible confounder in the relationship between racial/ethnic background and placement in special education. In this

chapter, I examine how the racial/ethnic composition might shape the nature of the relationship between race/ethnicity and disability. I first examine student-level characteristics associated with each type of disability to assess my typology of more- and less-advantaged disability categories. Then I ask whether and how school-level racial/ethnic composition moderates the relationship between individual race/ethnicity and type of disability.

HYPOTHESES

Above, I present four conceptual frameworks for school racial/ethnic composition's moderation of the relationship between individual-level race/ethnicity and disability status: universal effects, social-psychological effects, racial-bias frog-pond, and racial competition.

Universal effects. Under a conceptualization of school context effects as universal, there is no variation by racial/ethnic composition in the relationship between race/ethnicity and disability status. It is conceivable, as I discuss above, that schools with higher proportions of students of color increase a child's risk of disability, consistent with their lower outcomes across other academic measures. Given the findings of Hibel and colleagues (2010), it seems more likely that universal effects would occur in the opposite direction, with higher-proportion white schools being more likely to have the resources to intervene and identify students with disabilities, or that any struggling students might stand out more from their peers (frog-pond effects) in this context, regardless of individual-level race/ethnicity.

Social-psychological effects. According to the social-psychological effects framework, students of color, particularly black students, experience greater distress when they are surrounded by fewer same-race peers, making them more likely to struggle academically and behaviorally, and therefore more likely to need extra supports in the form of special education services. Under this framework, students of color would experience similar increases in

likelihood of special education services across disability categories. Based on the existing research, white students will experience no difference in need of special education services because of the racial/ethnic composition of the school.

Racial-bias frog-pond effects. According to the framework I present of frog-pond effects driven by racial/ethnic bias, students stand out from their peers more when they are in a less represented racial/ethnic group at their school. Therefore, when students of color are in schools with greater proportions of white students, they are more likely to be perceived as academically and behaviorally struggling, and identified with disabilities. White students would be more likely to be identified with academic categories of disability when they are surrounded by more peers of color, as any type of academic challenge would be perceived as problematic as compared to the higher levels of achievement expected of them.

Racial competition. Under the racial competition framework, white parents seek to maintain advantages for their children through exclusion of students of color and through acquisition of additional resources. Students of color, therefore, would be more likely to be placed in less advantaged, more exclusionary categories of disability, especially black children, who are more likely to be seen as disruptive than their peers. White students in schools with more students of color would be less likely to be identified with the less advantaged, more exclusionary categories of disability, which would place them in classrooms with more peers of color, and more likely to be identified with more advantaged categories of disability, which allow even struggling white students to maintain positions in higher level ability groups and tracks, while also providing additional resources.

Given the data available, I will not be able to completely adjudicate between all four hypotheses of how the racial/ethnic context might matter. This is merely a starting point in determining whether the data support one or more of the hypotheses.

METHODS

My research takes place in Wisconsin, which has a wide range of racial compositions in its schools and notable racial inequalities in education and specifically in special education (Vanneman et al., 2009). I use a dataset from the Wisconsin Department of Instruction that includes all 895,791 students in all 2,214 schools. The advantages of the size of this dataset as compared to previous research on contextual effects in racial/ethnic disproportionality in special education cannot be overstated – the numbers of students across disability categories allows for estimation of categories excluded from other research, notably Emotional Disorder. Analyses that include individual achievement test scores drop students in grades Pre-Kindergarten through 2, 9, 11 and 12, as these students do not receive a score through the Wisconsin Student Assessment System, leaving a sample of 429,228 students in 2,040 schools. I examine student- and school-level factors to predict whether students are in special education of any type, as well as identification with Intellectual Disability, Emotional Disorder, Specific Learning Disability, Other Health Impairment, Speech-Language Impairment, and Autism. The likelihood of placement and magnitude of predictors for these binary outcomes are estimated through a series of logistic regression models, with a reference category of no disability for each analysis. To appropriately estimate the student-level effects that are clustered by school, as well as the school-level effects on the model, I used a mixed effects logistic regression. The Laplace approximation method was used to improve computational speed.

For student-level predictors I include gender, race/ethnicity, free- and reduced-lunch status, English-language-learner (ELL) status, attendance, transfer-status, and math and reading test proficiency. At the school level, I include aggregate race/ethnicity, free- and reduced-lunch status, English-language-learner status, math and reading test proficiency, attendance rates, transfer students, and school-level aggregate teacher data, including race/ethnicity, education level, and whether they are bilingual. Full descriptions and descriptive statistics for each of these variables can be found in the dissertation methods chapter. To test the moderation of school-level racial/ethnic composition on the relationship between student-level race/ethnicity and disability status, I include cross-level interactions between student-level race/ethnicity and school-level racial/ethnic composition. I also include cross-level interactions between student-level race/ethnicity and school-level proportion of teachers of color.

For each outcome, I use hierarchical regressions. Model 1 includes gender and race/ethnicity, allowing for a comparison to the large body of literature that examines only these factors. Model 2 adds the remaining individual-level variables. Model 3 adds the school-level variables, and Model 4 adds interactions between individual-level race/ethnicity and school-level racial/ethnic composition and proportion of teachers of color. I include alternate models in the appendix: Models 5, 6, and 7 do not include individual test scores, as this achievement data is likely partially endogenous, as it might be partially the result of special education placement. Also in the appendix are Models 8, 9, 10, and 11, which measure the racial/ethnic composition as proportion white. The main models measure the composition as proportion of each nonwhite racial/ethnic group because the hypotheses generally rely on theory of individual race effects varying by the proportion of same-race peers. However, because there are some theorized

mechanisms that relate to the proportion of white students, these models are included in the appendix.

RESULTS

I report results in terms of the coefficients and, for easier interpretation of logistic regression coefficients, the exponentiated coefficients (the exponentiated coefficients for the constants are the baseline odds, the exponentiated coefficients for the individual- and school-level covariates are the odds ratios, and the exponentiated coefficients for the interactions are the ratios of odds ratios). For each outcome, I will discuss effects for individual student characteristics, focusing on gender, race, and ethnicity, and examine how these effects change as individual and school-level controls are added to the models. Then, I return to each outcome to examine how contextual conditions moderate the effects of individual characteristics.

Individual-level Characteristics and Placement in Different Categories of Disability

All disabilities. For the outcome of whether a child receives special education services for any disability category for Model 1, gender and race/ethnicity predict disability in the directions found in the vast majority of the racial/ethnic disproportionality literature: boys are more likely than girls to be in special education, black and Native American students are much more likely than white students, Asian students are less likely than white students, and Latino students are just slightly more likely than white students to be placed in special education. In the subsequent models, the addition of the individual-level variables reverses the direction for black and Latino students, contradicting the vast majority of special education disproportionality literature, but replicating the findings of recent work (Hibel et al., 2010; Morgan et al., 2012; Shifrer et al., 2011).

Less-advantaged disabilities. For the outcome of whether a student has Emotional Disorder, Model 1 again replicates the findings of most of the racial/ethnic disproportionality literature, with boys more likely than girls, black and Native American students more likely than white students, and Latino and Asian students less likely than white students. When the remaining individual-level variables are included in Model 2, black students become less likely than their peers to be identified with Emotional Disorder; the model also indicates decreased odds of Emotional Disorder with higher test scores, attendance, and socioeconomic status in this model, and that ELL students are less likely to have this disability. In Model 3, when school-level factors are added, the results appear to replicate the recent findings of a lack of overrepresentation among black students in particular.

For the outcome of whether a student is identified with Intellectual Disability, Model 1 again replicates the findings of most of the racial/ethnic disproportionality literature, with boys more likely than girls, black, Native American, and Latino students more likely than white students, Asian students less likely than white students. When the remaining individual-level variables are included, in Model 2, the direction of effects reverses for black, Latino, and Native American students, remaining so when all the school-level variables included in Model 3.

More advantaged disabilities. For the outcome of whether a student has Other Health Impairment (most frequently ADD/ADHD), Model 1 again replicates the findings of most of the racial/ethnic disproportionality literature, with boys more likely than girls, black and Native American students more likely than white students, and Latino and Asian students less likely than white students. For this disability category, the addition of the remaining individual- and school-level variables reveals similar results as is found in the newer disproportionality

literature, with black, Latino, and Native American children less likely than their white peers to be labeled with Other Health Impairment.

For the outcome of Autism, the results of Model 1 reveal different results than the other categories, with Asian, black, and Latino students less likely than white students to be identified with this disability, and Native American students have marginally significantly greater odds of Autism. Boys are more likely than girls to receive this label, as with all other tested categories of disability, and replicating existing research findings on gender differences. The addition of the remaining individual and school-level variables, in Model 3, reduces the odds of black students being labeled with Autism even further, while the difference for Asian students relative to white students disappears, and the effect for Native American students reverses direction, becoming marginally significantly negative. Notably, this is the only disability category that is more likely among students of higher socioeconomic status.

Specific Learning Disability. For the outcome of whether a student has Specific Learning Disability, Model 1 estimates boys more likely than girls, black, Latino and Native American students more likely than white students, and Asian students less likely than white students, again reflecting the vast majority of the disability disproportionality literature. These effects on the model reverse for black, Latino, and Native American students with the addition of the remaining individual-level variables in Model 2, and maintain these patterns when the contextual variables are added in Model 3, consistent with individual-level findings of recent research on race/ethnicity and placement in special education (Hibel et al., 2010). Lower-income students are more likely to receive the label of Specific Learning Disability, and having higher academic achievement reduces the odds of this outcome, yet having transferred schools that year makes a student less likely to be labeled with this disability.

How does school context moderate the relationship between individual race/ethnicity and type of disability?

The next set of results examine the primary question of this chapter, of how the school racial/ethnic composition might matter differently for students of different racial/ethnic backgrounds.

All disabilities. In model 4, the proportions of the school that are Asian, black, and Latino elevate all students' likelihood of being placed in special education, while the individual-level effect of being Asian, black or Latino is negative, and the individual-level effect of being Native American is positive. So far, this generally replicate the findings of the newer disproportionality literature (Hibel et al., 2010). Yet in the interactions between student race/ethnicity and school racial/ethnic composition, it becomes clear that the school-level increases applies mainly to white students, while being surrounded by more same-race/ethnicity peers decreases the odds for students of color relative to white students. Having fewer ELL students, more students qualifying for free and reduced lunch, and more high-performing peers increases a student's odds of placement in special education. Having more teachers of color in the school also increases all students' odds, but for students of color, the interaction reveals a reduction in their odds of placement in special education relative to white students.

Less-advantaged disabilities. For the outcome of being labeled with Emotional Disorder, Model 4 indicates that the proportion of students of color in a school only has an effect on the likelihood of placement in the case of Latino composition, which reduces students' odds of being labeled with this disability. Meanwhile, the main effects for being black or Native American increase the odds of Emotional Disorder, and the main effects for being Asian or Latino decrease a student's odds of this disability. Looking to the cross-level interactions, while the proportion

Asian and black had no effect for white students, being surrounded by more same-race peers reduces the odds for black and Asian students. For Latino students, who have lower odds of Emotional Disorder, and whose increased presence in a school reduces the odds of placement for all students, being surrounded by more same-race peers further decreases their odds of Emotional Disorder. Being in a school with more ELL students, more transient populations, and more teachers with masters' degrees increases the odds that a student will be labeled with Emotional Disorder. The racial composition of teachers does not affect students' odds of this outcome.

For the outcome of being labeled with an Intellectual Disability, recall that in Model 3, Asian, Latino, and Native American students had lower odds than their white peers of being placed in special education. In Model 4, there are no significant main effects for individual-level race/ethnicity; the racial/ethnic composition of the school has no significant effects for any students (other than a marginally significant reduction for all students when the proportion of Latino students increases), nor does it change the odds for students of color in the cross-level interactions. However, there are significant effects on the model for the racial/ethnic composition of the teachers. When there are more teachers of color in a school, the odds of identification with Intellectual Disability increase for all students, although this increase is significantly dampened for black and Latino students, and the effect is reversed for Native American students, although this estimate is only marginally significant. Being in a school with more students qualifying for free- and reduced-lunch increases the likelihood that students are identified with Intellectual Disability, while having a more transient population decreases the odds.

More advantaged disabilities. For the outcome of being labeled with Other Health Impairment (most frequently ADD/ADHD), the main effects for being black and Latino are negative. Increased proportions of Asian, black, and Latino students increase all students' odds

of being labeled with this disability, yet the increases in same-race peers are greatly dampened for students of color, revealing that these increases from the racial/ethnic composition mainly pertain to white students. Having more teachers of color and bilingual teachers increases the odds, but for Asian, black, and Native American students, having more teachers of color in the school reduces their odds relative to white students. Being in a school with more ELL peers reduces a student's odds of placement in this category, while having more high-performing peers increases the odds of having this disability. Notably, the proportion of students qualifying for free- and reduced-lunch does not affect a student's odds of Other Health Impairment.

For autism, the proportion of students of color in a school increases the odds of all students being labeled with this disability across categories of racial/ethnic composition, while the main effect of being black or Latino reduces a child's odds of being identified as having autism. For black and Latino students who are in schools with more same-race peers, however, that increase from the racial/ethnic composition is nearly eliminated, revealing the increase to apply mainly to white students. A similar, but marginally significant pattern is present for Asian students. While the proportion of teachers of color has no significant main effect on the model, Asian and Latino students experience marginally significant and significant, respectively, reductions in their odds of being labeled with autism relative to their white peers when they have a greater proportion of teachers of color in their schools. Other than the racial/ethnic composition variables, the only school-level variables that significantly affect students' odds of being labeled with autism are the average math and reading achievement scores, which are associated with higher rates of autism.

Specific Learning Disability. Recall that in Model 3, Asian, black, and Latino students were less likely than white students to be identified with Specific Learning Disability, and, like

all categories, boys have greater odds than girls. In Model 4, the main effects for being Asian, black, and Latino are negative. The proportion Asian marginally significantly increases all students' odds of being labeled with this disability, and the proportion Latino significantly increases students' odds, but there are no main effects for the proportion black or Native American. Yet in the interactions, black and Native American students experience reductions in their odds of being identified with Specific Learning Disability, enhancing their reduced odds in general. Black students also experience further reduced odds relative to white students when there are more teachers of color, though only marginally significantly, and Asian students experience significantly reduced odds when more of their teachers are nonwhite, enhancing the main effects of being Asian on the model. Being in a school with more students qualifying for free- and reduced-lunch increases the risk of Specific Learning Disability, while higher average levels of achievement and attendance also increase the likelihood. However, having a more transient student population reduces a child's odds of identification with Specific Learning Disability.

DISCUSSION

Which Student-Level Characteristics Predict Placement in Different Categories of Disability?

The predictors of placement in each category of disability are consistent with my typology of less-advantaged and more-disadvantaged disability categories. The estimates often contradict the body of disproportionality literature that tends to examine bivariate associations between race/ethnicity and disability. These individual-level estimates support the more recent findings that confounders of race/ethnicity actually over-explain racial/ethnic differences for the more-advantaged categories of disability, but call into question whether the same pattern exists for less-advantaged categories of disability.

In nearly every category of disability, boys have more than double the odds of placement in special education than do girls, and the full models add very little explanation for these differences beyond the initial models that include only race and gender. This supports findings across the literature (Coutinho & Oswald, 2005; Hibel et al., 2010; Shifrer et al., 2011; Sullivan & Bal, 2013), despite a lack of research focusing on these disparities (Shifrer et al., 2011). Research suggests that girls who could benefit from services are not being identified, and that gender bias is a likely explanation (Wehmeyer & Schwartz, 2001). This underidentification may have its roots in the very definitions of disabilities, which have been based on male norms of behavior (Anderson, 1997).

All disabilities. The student-level factors predicting placement are consistent with more recent research that examines the role of confounders in racial/ethnic disproportionality (Hibel 2010; Shifrer et al. 2011), in which black and Latino students are actually less likely than white students to be placed in special education. However, Native American students remain more likely to be placed in special education than their white peers. The effects of being black and Latino suggest that positions of racial/ethnic disadvantage are associated with lower placement in special education, especially given the findings for Native American students when the models estimate each category of disability separately, which appear to indicate that a less-advantaged category of disability is driving the difference for this racial/ethnic group from white students. The remaining individual-level characteristics suggest that special education placement is associated with individual-level disadvantage, as lower socioeconomic status and lower academic achievement are associated with greater odds of placement. The reduced odds for ELL students is likely explained by schools' tendency to provide services for these students through ELL services (Hibel & Jasper, 2012).

Less-advantaged disabilities. Of the two categories conceptualized in the introduction as less advantaged disabilities, Emotional Disorder and Intellectual Disability, the association between low socioeconomic status and identification is positive and larger than in the estimates for other categories of disability, suggesting that these are, indeed, less advantaged categories of disability. Emotional Disorder more consistently supports the typology, as black and Native American students are more likely to be identified with this disability, as are students who are more transient.

More-advantaged disabilities. Other Health Impairment and Autism are conceptualized in the introduction as more advantaged disabilities. Notably, Autism is the only category of disability that has a negative association with free-and-reduced lunch (FRL), consistent with a typology of greater advantage. While Other Health Impairment is positively associated with this indicator of socioeconomic disadvantage, the relationship is weaker than for the less-advantaged categories of disability: while FRL students have just 1.260 the odds of Other Health Impairment as compared to their higher-income peers, the odds ratio for this factor is 1.888 for Intellectual Disability and 2.613 for Emotional Disorder.

Specific Learning Disability. The individual-level factors associated with Specific Learning Disability appear to confirm its status as outside of the less- and more-advantaged dichotomy. Qualifying for FRL has a positive association with being labeled with Specific Learning Disability, and at an odds ratio of 1.398, this estimate is between the magnitudes of the more-advantaged and less-advantaged categories' associations with FRL. The lower representation of students of color in this category is more consistent with the patterns of more-advantaged categories.

Without data on the effects of various disability labels on students' academic, emotional-behavioral, social, and attainment outcomes, the individual-level results discussed in this section cannot truly answer the question of whether certain categories are higher- or lower-status than others. The intent is merely to ask whether the typology of more- and less-advantaged categories of disability is reasonable. Taken together, the associations between categories of race/ethnicity and socioeconomic status provide some confirmation that my conceptualization is valid.

How does school context moderate the relationship between individual race/ethnicity and type of disability?

I outlined four possible mechanisms of school racial/ethnic composition above: universal effects, social-psychological effects, racial-bias-driven frog-pond effects, and racial competition. The predicted patterns of results overlap to some extent across the last two hypotheses; thus I repeat the caveat that I cannot completely distinguish between them in the discussion of results. Moreover, it is likely that school racial/ethnic composition affects students' risk of special education placement through a variety of mechanisms. This is merely a first step toward understanding how racial/ethnic context might matter for the relationship between race/ethnicity and disability status.

Universal effects. According to the universal effects hypothesis, the qualities of higher- and lower-proportion minority schools have the same effects for students of different racial/ethnic backgrounds. My results do not support this hypothesis, as there are statistically significant and substantively meaningful interactions between student-level race/ethnicity and school-level racial/ethnic composition.

Social-psychological effects. If the school racial/ethnic composition affects students' risk of disability through social-psychological effects, then students of color would be more likely to

struggle academically and behaviorally when they have fewer same-race peers, while white students should experience no effect of school racial/ethnic composition. The results presented here indicate that white students, do indeed, experience changes in their risk of special education placement, as well as for their risk of each separate category of disability, with the exception of Intellectual Disability and Emotional Disorder. The results also indicate that, despite increases in risk for all students in schools with more students of all non-white racial/ethnic groups, students of color experience decreases in their odds of special education placement when they are surrounded by more same-race peers. This effect holds most consistently for black students. Both the existence of a significant and meaningful interaction effect on the model for white students, as well as the reduced risk of disability for students of color in schools with more same-race peers, fail to support the social-psychological effects hypothesis.

Racial-bias frog-pond effects. In this extension of frog-pond effects, racially/ethnically biased expectations and perceptions of students exacerbate perceived comparisons between students. Specifically, students of color in schools with smaller proportions of same-race peers would be perceived as more behaviorally or academically problematic than when they are in schools with larger proportions of same-race peers. White students, alternatively, would be expected to perform at a higher level when they are in schools with more students of color, as their low performance would be perceived as "deserving" intervention.

The results for white students are generally consistent with this hypothesis. White students' odds of identification with any disability increase when they are surrounded by more Asian, black, or Latino peers, with similar directions but larger effects for the outcome of Other Health Impairment, arguably the least stigmatized and most advantageous category of disability when used for its most common diagnosis, ADHD/ADD. The Autism outcome reveals similar

patterns, with the proportion Native American also predicting increased placement for white students. For the less-advantaged disabilities and for Specific Learning Disability, attending a school with a greater proportion of students of color does has few effects for the odds of white students being labeled; given that these are less desirable categories of disability, school staff may be less likely to suspect them, and parents may advocate for the more-advantaged disabilities at qualification meetings.

The results also support the hypothesis of frog-pond effects driven by racial/ethnic bias for white students. For students of color, attending schools with more same-race peers generally decreases the odds of identification with a disability relative to white students in these schools, with the exception of the outcome of Intellectual Disability. Additionally, the reductions in identification for students of color when they attend schools with more teachers of color may be further support for this mechanism. While teachers of color likely experience some racial/ethnic bias (likely implicit) in their expectations and perceptions of students, this is likely to a lesser extent than their white peers.

Racial competition. Finally, under the racial competition hypothesis, students of color are more likely to be placed in less advantaged, more exclusionary categories of disability when they are surrounded by fewer same-race peers, with stronger effects for black children, who are perceived as more disruptive and aggressive than their peers. White students, under this hypothesized mechanism, experience decreased risk of less-advantaged categories of disability and increased risk of more-advantaged categories of disability when they attend schools with more students of color.

For white students, the results support the racial competition hypothesis. For the outcomes of overall special education placement, Other Health Impairment, and Autism,

increased proportions of Asian, black, and Latino students consistently predict higher odds of white students receiving these labels. Additionally, for Autism, the proportion of Native American students also significantly predicts greater risk of identification for white students. For less-advantaged categories of disability, there is no similar increased risk of placement, though there are some significant effects of the racial composition variables that are not explained by this theory: the increased odds of Specific Learning Disability for students in schools with more Asian students, and the reduction of odds of less-advantaged disabilities and Specific Learning Disability for students in schools with more Latino students.

For students of color, the results generally support the racial competition hypothesis. Students of color have lower odds relative to white students when they are surrounded by more same-race peers, reducing or eliminating the main effects of racial/ethnic composition for the more advantaged disability outcomes. For Specific Learning Disability, the proportions of black and Native American students had no main effects, and therefore no effects for white students' odds. Yet when black and Native American students attend schools with more same-race peers, they experience decreased odds of being labeled with this disability. Similarly, for the outcome of Emotional Disorder, there are no main effects for the proportion of Asian, black, or Native American students, white the proportion of Latino students predicts reduced risk of this disability. Yet for Asian, black, and Latino students, attending a school with more same-race peers decreases identification with Emotional Disorder, supporting the theory that these students are being excluded from the classroom through this disability in higher-proportion-white schools. The outcome of Intellectual Disability does not support this theory, as there are no significant interactions between individual-level race/ethnicity and school-level racial/ethnic composition. Finally, the findings of generally reduced odds of disability for students of color in schools with

more teachers of color supports the racial competition hypothesis, as these teachers may be more likely to resist parent pressure to stratify the school along racial/ethnic lines.

CONCLUSION

In this chapter, I examined the validity of my typology of differential statuses of disability categories, and I tested whether and how racial/ethnic composition moderates the relationship between race/ethnicity and disability. I found some support for my conceptualization of disability statuses: more-advantaged disabilities, which include Other Health Impairment and Autism; less-advantaged disabilities, which include Emotional-Behavioral Disorder and Intellectual Disability; and Specific Learning Disability, which does not clearly fit in either category. In my test of whether and how racial/ethnic composition moderates the relationship between race/ethnicity and disability, I found that the risk of each racial/ethnic group being identified with a disability varies with the racial/ethnic composition of the school. For white students, attending schools with more peers of color increases their placement in more-advantaged disabilities. For students of color, attending schools with more same-race peers decreases the risk placement in special education, excepting the outcome of Intellectual Disabilities. These results most consistently support the hypotheses of frog-pond effects driven by racial/ethnic bias, and racial competition.

These findings speak to existing research on racial/ethnic disproportionality in special education, providing a further explanation of race/ethnicity differences through the inclusion of school context as a moderator rather than simply a confounder. While the models without the interactions largely replicate Hibel and colleagues' (2010) finding that students of color are underrepresented in special education, my full results demonstrate that individual-level race/ethnicity effects matter.

Limitations. This study is not without limitations. Notably, the achievement data are particularly problematic. Children with disabilities are often identified because they are low performers, and after placement in special education, they receive instruction which may actually further limit their academic achievement. The math and reading scores are therefore likely partially endogenous. I have included a set of alternative models that eliminate the test scores; however, given the importance of academic skills to disability identification in the work of Hibel and colleagues (2010), including the scores in the main models is the lesser of two evils. Additionally, I stress that this study is observational, and that I cannot speak to causality – the theories presented to explain the relationships cannot be fully tested here.

Relatedly, with the data in this chapter, I cannot distinguish between the two mechanisms: frog-pond effects driven by racial/ethnic bias and racial competition. The experimental data in Chapter 4 will provide some insight, but qualitative data collection will be necessary to fully understand *how* racial composition matters—how the actions of likely well-intentioned educators and parents might exacerbate racial/ethnic inequalities.

Table 1. Any Disability

	Model 1			Model 2			Model 3			Model 4		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-2.289	0.101	0.000	1.938	6.945	0.000	-0.538	0.584	0.000	-0.486	0.615	0.002
male	0.769	2.157	0.000	0.780	2.182	0.000	0.780	2.181	0.000	0.780	2.181	0.000
Asian	-0.441	0.643	0.000	-0.435	0.647	0.000	-0.446	0.640	0.000	-0.193	0.825	0.000
black	0.519	1.680	0.000	-0.394	0.674	0.000	-0.367	0.693	0.000	-0.154	0.857	0.000
Latino	0.067	1.069	0.000	-0.266	0.767	0.000	-0.258	0.773	0.000	-0.153	0.858	0.000
Native American	0.520	1.683	0.000	0.029	1.029	0.445	0.054	1.056	0.162	0.152	1.164	0.001
ELL				-0.839	0.432	0.000	-0.833	0.435	0.000	-0.806	0.447	0.000
FRL				0.372	1.451	0.000	0.376	1.456	0.000	0.371	1.450	0.000
attendance				-0.014	0.986	0.000	-0.016	0.985	0.000	-0.015	0.985	0.000
transferred in the last year				-0.155	0.856	0.000	-0.142	0.867	0.000	-0.151	0.860	0.000
math proficiency level				-0.516	0.597	0.000	-0.521	0.594	0.000	-0.520	0.595	0.000
reading proficiency level				-0.981	0.375	0.000	-0.989	0.372	0.000	-0.991	0.371	0.000
School-level												
proportion Asian							2.510	12.301	0.000	2.310	10.071	0.000
proportion black							0.555	1.741	0.000	0.855	2.352	0.000
proportion Latino							0.775	2.170	0.000	0.711	2.037	0.000
proportion Native American							-0.125	0.882	0.528	0.232	1.261	0.396
proportion ELL							-1.052	0.349	0.000	-1.069	0.343	0.000
proportion FRL							0.298	1.347	0.000	0.322	1.380	0.000
average attendance							0.017	1.017	0.000	0.017	1.017	0.000
proportion transferred in the last year							0.487	1.627	0.026	0.378	1.459	0.087
average math proficiency level							1.170	3.223	0.000	1.197	3.310	0.000
average reading proficiency level							1.610	5.001	0.000	1.507	4.515	0.000
proportion teachers of color							0.424	1.527	0.013	1.697	5.455	0.000
proportion teachers with masters' degrees							-0.010	0.990	0.880	-0.046	0.955	0.491
proportion bilingual teachers							0.363	1.438	0.409	0.304	1.355	0.495
Student-school Interactions												
Asian x proportion Asian										-1.447	0.235	0.001
Black x proportion Black										-0.685	0.504	0.000
Latino x proportion Latino										-0.452	0.636	0.000
Native American x proportion Native American										-0.629	0.533	0.028
Asian x proportion teachers of color										-2.986	0.050	0.000
black x proportion teachers of color										-1.124	0.325	0.000
Latino x proportion teachers of color										-1.034	0.356	0.000
Native American x proportion teachers of color										-1.609	0.200	0.001

Table 2. Other Health Impairment

	Model 1			Model 2			Model 3			Model 4		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-4.506	0.011	0.000	0.262	1.299	0.000	-2.497	0.082	0.000	-2.470	0.085	0.000
male	0.902	2.463	0.000	0.921	2.513	0.000	0.921	2.511	0.000	0.921	2.511	0.000
Asian	-1.049	0.350	0.000	-0.867	0.420	0.000	-0.946	0.388	0.000	-0.125	0.882	0.408
black	0.717	2.049	0.000	-0.312	0.732	0.000	-0.454	0.635	0.000	-0.237	0.789	0.000
Latino	-0.125	0.882	0.000	-0.353	0.703	0.000	-0.433	0.648	0.000	-0.330	0.719	0.000
Native American	0.403	1.497	0.000	-0.208	0.812	0.014	-0.165	0.848	0.058	-0.043	0.958	0.678
ELL				-1.247	0.287	0.000	-1.219	0.295	0.000	-1.160	0.313	0.000
FRL				0.231	1.259	0.000	0.239	1.270	0.000	0.231	1.260	0.000
attendance				-0.018	0.982	0.000	-0.020	0.981	0.000	-0.019	0.981	0.000
transferred in the last year				-0.210	0.811	0.000	-0.203	0.816	0.000	-0.211	0.810	0.000
math proficiency level				-0.700	0.497	0.000	-0.707	0.493	0.000	-0.705	0.494	0.000
reading proficiency level				-0.918	0.399	0.000	-0.930	0.395	0.000	-0.931	0.394	0.000
School-level												
proportion Asian							4.095	60.052	0.000	4.056	57.759	0.000
proportion black							1.821	6.179	0.000	1.958	7.085	0.000
proportion Latino							2.388	10.889	0.000	2.325	10.225	0.000
proportion Native American							0.230	1.259	0.513	0.688	1.989	0.188
proportion ELL							-2.769	0.063	0.000	-2.845	0.058	0.000
proportion FRL							-0.130	0.878	0.353	-0.091	0.913	0.518
average attendance							0.005	1.005	0.506	0.518	1.679	0.460
proportion transferred in the last year							0.114	1.120	0.751	0.048	1.050	0.893
average math proficiency level							1.589	4.901	0.000	1.622	5.062	0.000
average reading proficiency level							1.503	4.494	0.000	1.406	4.078	0.001
proportion teachers of color							0.839	2.314	0.002	2.020	7.540	0.000
proportion teachers with masters' degrees							0.079	1.082	0.500	0.050	1.052	0.668
proportion bilingual teachers							1.593	4.920	0.032	1.446	4.246	0.054
Student-school Interactions												
Asian x proportion Asian										-8.247	0.000	0.000
Black x proportion Black										-0.432	0.649	0.019
Latino x proportion Latino										-0.552	0.576	0.018
Native American x proportion Native American										-0.795	0.451	0.176
Asian x proportion teachers of color										-2.789	0.062	0.000
black x proportion teachers of color										-1.194	0.303	0.001
Latino x proportion teachers of color										-0.473	0.623	0.243
Native American x proportion teachers of color										-1.525	0.218	0.085

Table 3. Autism

	Model 1			Model 2			Model 3			Model 4		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-5.718	0.003	0.000	-5.718	0.003	0.000	-4.662	0.009	0.000	-4.596	0.010	0.000
male	1.737	5.681	0.000	1.772	5.882	0.000	1.772	5.883	0.000	1.772	5.882	0.000
Asian	-0.527	0.591	0.000	-0.138	0.871	0.207	-0.172	0.842	0.118	0.140	1.150	0.398
black	-0.469	0.625	0.000	-1.341	0.262	0.000	-1.331	0.264	0.000	-1.059	0.347	0.000
Latino	-0.529	0.589	0.000	-0.523	0.593	0.000	-0.518	0.596	0.000	-0.235	0.791	0.026
Native American	0.137	1.147	0.096	-0.233	0.792	0.060	-0.218	0.804	0.093	-0.087	0.916	0.565
ELL				-1.581	0.206	0.000	-1.623	0.197	0.000	-1.546	0.213	0.000
FRL				-0.129	0.879	0.000	-0.110	0.896	0.004	-0.113	0.893	0.003
attendance				0.004	1.004	0.210	-0.002	0.998	0.607	-0.001	0.999	0.670
transferred in the last year				-0.423	0.655	0.000	-0.412	0.662	0.000	-0.423	0.655	0.000
math proficiency level				-0.417	0.659	0.000	-0.432	0.649	0.000	-0.431	0.650	0.000
reading proficiency level				-0.859	0.424	0.000	-0.880	0.415	0.000	-0.881	0.414	0.000
School-level												
proportion Asian							2.238	9.377	0.002	2.261	9.590	0.002
proportion black							1.644	5.178	0.000	1.902	6.699	0.000
proportion Latino							0.736	2.087	0.066	0.976	2.655	0.025
proportion Native American							0.795	2.215	1.710	1.392	4.023	0.033
proportion ELL							0.569	1.767	0.345	0.300	1.350	0.627
proportion FRL							-0.016	0.984	0.928	0.015	1.015	0.933
average attendance							0.019	1.019	0.106	0.020	1.020	0.095
proportion transferred in the last year							0.903	2.468	0.133	0.704	2.022	0.250
average math proficiency level							1.465	4.326	0.004	1.537	4.649	0.002
average reading proficiency level							1.925	6.854	0.001	1.752	5.764	0.002
proportion teachers of color							-1.091	0.336	0.011	0.090	1.094	0.879
proportion teachers with masters' degrees							-0.145	0.865	0.316	-0.197	0.821	0.175
proportion bilingual teachers							0.765	2.149	0.440	0.896	2.449	0.374
Student-school Interactions												
Asian x proportion Asian										-2.981	0.051	0.058
Black x proportion Black										-1.032	0.356	0.005
Latino x proportion Latino										-0.863	0.422	0.071
Native American x proportion Native American										-1.108	0.330	0.181
Asian x proportion teachers of color										-2.319	0.098	0.056
black x proportion teachers of color										-0.449	0.639	0.541
Latino x proportion teachers of color										-2.588	0.075	0.006
Native American x proportion teachers of color										-1.565	0.209	0.376

Table 4. Specific Learning Disability

	Model 1			Model 2			Model 3			Model 4		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-3.62	0.027	0.000	2.440	11.476	0.000	-0.729	0.482	0.001	-0.714	0.490	0.001
male	0.56	1.759	0.000	0.489	1.630	0.000	0.488	1.628	0.000	0.487	1.628	0.000
Asian	-0.36	0.700	0.000	-0.653	0.521	0.000	-0.620	0.538	0.000	-0.441	0.643	0.000
black	0.69	2.001	0.000	-0.647	0.524	0.000	-0.495	0.610	0.000	-0.382	0.682	0.000
Latino	0.34	1.402	0.000	-0.238	0.788	0.000	-0.168	0.846	0.000	-0.163	0.850	0.000
Native American	0.60	1.816	0.000	-0.069	0.933	0.237	-0.023	0.977	0.696	0.040	1.041	0.575
ELL				-0.813	0.444	0.000	-0.816	0.442	0.000	-0.810	0.445	0.000
FRL				0.328	1.388	0.000	0.337	1.401	0.000	0.335	1.398	0.000
attendance				0.007	1.007	0.000	0.003	1.003	0.010	0.003	1.003	0.008
transferred in the last year				-0.454	0.635	0.000	-0.423	0.655	0.000	-0.425	0.654	0.000
math proficiency level				-0.679	0.507	0.000	-0.684	0.505	0.000	-0.684	0.505	0.000
reading proficiency level				-1.369	0.254	0.000	-1.384	0.251	0.000	-1.385	0.250	0.000
School-level												
proportion Asian							0.957	2.603	0.034	0.819	2.269	0.075
proportion black							-0.167	0.846	0.266	0.066	1.068	0.717
proportion Latino							-0.496	0.609	0.040	-0.606	0.546	0.020
proportion Native American							-0.722	0.486	0.010	-0.204	0.815	0.615
proportion ELL							0.162	1.175	0.659	0.178	1.195	0.629
proportion FRL							0.563	1.756	0.000	0.574	1.776	0.000
average attendance							-0.017	0.983	0.009	-0.017	0.983	0.011
proportion transferred in the last year							-0.776	0.460	0.024	-0.842	0.431	0.015
average math proficiency level							1.539	4.660	0.000	1.554	4.732	0.000
average reading proficiency level							2.287	9.848	0.000	2.242	9.410	0.000
proportion teachers of color							0.746	2.109	0.002	1.357	3.883	0.000
proportion teachers with masters' degrees							0.025	1.026	0.784	0.011	1.011	0.906
proportion bilingual teachers							-0.339	0.712	0.572	-0.506	0.603	0.403
Student-school Interactions												
Asian x proportion Asian										-0.187	0.829	0.780
Black x proportion Black										-0.366	0.694	0.041
Latino x proportion Latino										-0.191	0.826	0.333
Native American x proportion Native American										-0.950	0.387	0.033
Asian x proportion teachers of color										-3.633	0.026	0.000
black x proportion teachers of color										-0.668	0.513	0.071
Latino x proportion teachers of color										0.038	1.039	0.921
Native American x proportion teachers of color										0.055	1.056	0.945

Table 5. Emotional Disorder

	Model 1			Model 2			Model 3			Model 4		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-5.167	0.006	0.000	-2.091	0.124	0.000	-2.757	0.063	0.000	-2.704	0.067	0.000
male	1.242	3.461	0.000	1.354	3.873	0.000	1.351	3.860	0.000	1.350	3.857	0.000
Asian	-1.611	0.200	0.000	-1.134	0.322	0.000	-1.069	0.343	0.000	-0.599	0.549	0.008
black	1.074	2.928	0.000	-0.176	0.839	0.000	0.073	1.076	0.108	0.234	1.264	0.000
Latino	-0.247	0.781	0.000	-0.476	0.621	0.000	-0.339	0.713	0.000	-0.190	0.827	0.021
Native American	1.141	3.130	0.000	0.341	1.407	0.000	0.348	1.416	0.000	0.354	1.425	0.000
ELL				-1.838	0.159	0.000	-1.853	0.157	0.000	-1.792	0.167	0.000
FRL				0.939	2.556	0.000	0.964	2.623	0.000	0.960	2.613	0.000
attendance				-0.037	0.964	0.000	-0.041	0.960	0.000	-0.041	0.960	0.000
transferred in the last year				0.422	1.525	0.000	0.422	1.525	0.000	0.418	1.519	0.000
math proficiency level				-0.518	0.596	0.000	-0.522	0.593	0.000	-0.521	0.594	0.000
reading proficiency level				-0.615	0.541	0.000	-0.626	0.535	0.000	-0.627	0.534	0.000
School-level												
proportion Asian							-0.311	0.732	0.618	-0.421	0.656	0.507
proportion black							-0.884	0.413	0.000	-0.296	0.744	0.263
proportion Latino							-1.965	0.140	0.000	-1.936	0.144	0.000
proportion Native American							0.482	1.619	0.130	0.426	1.531	0.403
proportion ELL							1.910	6.756	0.000	1.768	5.861	0.001
proportion FRL							-0.158	0.854	0.277	-0.119	0.888	0.414
average attendance							0.040	1.040	0.000	0.040	1.041	0.000
proportion transferred in the last year							1.253	3.502	0.000	1.144	3.139	0.001
average math proficiency level							0.402	1.495	0.317	0.442	1.556	0.271
average reading proficiency level							0.344	1.411	0.428	0.230	1.258	0.597
proportion teachers of color							0.026	1.026	0.933	0.658	1.931	0.204
proportion teachers with masters' degrees							0.426	1.531	0.000	0.386	1.471	0.002
proportion bilingual teachers							0.580	1.786	0.482	0.631	1.880	0.450
Student-school Interactions												
Asian x proportion Asian										-5.560	0.004	0.021
Black x proportion Black										-0.994	0.370	0.000
Latino x proportion Latino										-0.848	0.428	0.033
Native American x proportion Native American										0.001	1.001	0.999
Asian x proportion teachers of color										-1.998	0.136	0.214
black x proportion teachers of color										-0.305	0.737	0.576
Latino x proportion teachers of color										-0.855	0.425	0.230
Native American x proportion teachers of color										-0.520	0.595	0.617

Table 6. Intellectual Disabilities

	Model 1			Model 2			Model 3			Model 4		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-5.023	1.392	0.000	-1.232	0.292	0.000	-1.340	0.262	0.000	-1.308	0.270	0.000
male	0.331	1.392	0.000	0.276	1.318	0.000	0.273	1.314	0.000	0.271	1.311	0.000
Asian	-0.294	0.745	0.000	-0.253	0.776	0.017	-0.238	0.788	0.026	-0.202	0.817	0.234
black	0.793	2.210	0.000	-0.151	0.860	0.004	-0.093	0.911	0.114	0.094	1.099	0.214
Latino	0.112	1.119	0.004	-0.249	0.780	0.000	-0.202	0.817	0.004	-0.062	0.940	0.499
Native American	0.419	1.520	0.000	-0.334	0.716	0.006	-0.298	0.743	0.020	-0.096	0.908	0.511
ELL				-1.030	0.357	0.000	-1.036	0.355	0.000	-1.009	0.365	0.000
FRL				0.647	1.910	0.000	0.644	1.905	0.000	0.636	1.888	0.000
attendance				-0.013	0.987	0.000	-0.015	0.985	0.000	-0.015	0.986	0.000
transferred in the last year				-0.176	0.839	0.013	-0.161	0.851	0.024	-0.167	0.846	0.019
math proficiency level				-0.105	0.900	0.000	-0.104	0.901	0.000	-0.102	0.903	0.000
reading proficiency level				-1.190	0.304	0.000	-1.198	0.302	0.000	-1.198	0.302	0.000
School-level												
proportion Asian							0.959	2.610	0.204	0.699	2.012	0.364
proportion black							-0.505	0.604	0.041	-0.388	0.678	0.197
proportion Latino							-0.796	0.451	0.054	-0.833	0.435	0.058
proportion Native American							-0.621	0.538	0.202	0.024	1.024	0.971
proportion ELL							0.105	1.111	0.865	0.088	1.092	0.888
proportion FRL							0.415	1.514	0.028	0.426	1.531	0.025
average attendance							0.026	1.026	0.019	0.027	1.028	0.015
proportion transferred in the last year							-1.146	0.318	0.048	-1.220	0.295	0.037
average math proficiency level							-0.611	0.543	0.245	-0.583	0.558	0.269
average reading proficiency level							0.569	1.766	0.311	0.474	1.606	0.400
proportion teachers of color							0.871	2.390	0.020	2.293	9.909	0.000
proportion teachers with masters' degrees							0.161	1.174	0.314	0.132	1.141	0.412
proportion bilingual teachers							0.072	1.074	0.943	0.015	1.015	0.988
Student-school Interactions												
Asian x proportion Asian										-0.537	0.436	0.677
Black x proportion Black										-0.367	0.693	0.198
Latino x proportion Latino										-0.410	0.664	0.268
Native American x proportion Native American										-0.821	0.440	0.324
Asian x proportion teachers of color										-0.830	0.436	0.280
black x proportion teachers of color										-1.388	0.250	0.010
Latino x proportion teachers of color										1.391	4.020	0.025
Native American x proportion teachers of color										-3.650	0.026	0.050

Table 7. Any Disability, Without Test Scores

	Model 5			Model 6			Model 7		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level									
constant	-2.553	0.078	0.000	-2.304	0.100	0.000	-2.312	0.099	0.000
male	0.784	2.190	0.000	0.784	2.190	0.000	0.784	2.190	0.000
Asian	-0.367	0.693	0.000	-0.367	0.693	0.000	-0.204	0.815	0.000
black	0.222	1.248	0.000	0.224	1.251	0.000	0.379	1.461	0.000
Latino	-0.011	0.989	0.418	-0.013	0.987	0.334	0.066	1.069	0.000
Native American	0.280	1.323	0.000	0.285	1.330	0.000	0.334	1.396	0.000
ELL	-0.395	0.674	0.000	-0.398	0.672	0.000	-0.382	0.682	0.000
FRL	0.670	1.955	0.000	0.671	1.957	0.000	0.669	1.952	0.000
attendance	-0.020	0.980	0.000	-0.021	0.980	0.000	-0.020	0.980	0.000
transferred in the last year	0.174	1.190	0.000	0.170	1.185	0.000	0.165	1.179	0.000
School-level									
proportion Asian				0.726	2.067	0.008	0.501	1.650	0.071
proportion black				-0.111	0.895	0.183	0.047	1.048	0.604
proportion Latino				0.258	1.295	0.080	0.206	1.228	0.176
proportion Native American				-0.113	0.893	0.490	-0.237	0.789	0.231
proportion ELL				-0.373	0.689	0.093	-0.367	0.693	0.100
proportion FRL				0.038	1.039	0.539	0.064	1.066	0.310
average attendance				0.027	1.027	0.000	0.026	1.027	0.000
proportion transferred in the last year				0.013	1.014	0.927	-0.022	0.979	0.882
average math proficiency level				-0.384	0.681	0.021	-0.364	0.695	0.029
average reading proficiency level				-0.041	0.959	0.795	-0.066	0.936	0.680
proportion teachers of color				0.219	1.245	0.127	1.354	3.873	0.000
proportion teachers with masters' degrees				0.042	1.043	0.434	0.020	1.020	0.717
proportion bilingual teachers				-0.260	0.771	0.486	-0.336	0.715	0.370
Student-school Interactions									
Asian x proportion Asian							-0.573	0.564	0.030
Black x proportion Black							-0.364	0.695	0.000
Latino x proportion Latino							-0.400	0.670	0.000
Native American x proportion Native American							0.210	1.234	0.231
Asian x proportion teachers of color							-2.678	0.069	0.000
black x proportion teachers of color							-1.202	0.301	0.000
Latino x proportion teachers of color							-0.662	0.516	0.000
Native American x proportion teachers of color							-1.998	0.136	0.000

Table 8. Other Health Impairment, Without Test Scores

	Model 5			Model 6			Model 7		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level									
constant	-4.757	0.009	0.000	-4.995	0.007	0.000	-5.013	0.007	0.000
male	0.918	2.505	0.000	0.917	2.503	0.000	0.917	2.502	0.000
Asian	-0.862	0.422	0.000	-0.931	0.394	0.000	-0.255	0.775	0.016
black	0.399	1.491	0.000	0.266	1.305	0.000	0.447	1.564	0.000
Latino	-0.133	0.876	0.000	-0.208	0.812	0.000	-0.073	0.930	0.113
Native American	0.128	1.136	0.026	0.114	1.121	0.053	0.254	1.289	0.000
ELL	-0.668	0.513	0.000	-0.660	0.517	0.000	-0.619	0.538	0.000
FRL	0.667	1.948	0.000	0.669	1.952	0.000	0.662	1.939	0.000
attendance	-0.024	0.977	0.000	-0.024	0.976	0.000	-0.024	0.977	0.000
transferred in the last year	0.211	1.235	0.000	0.187	1.206	0.000	0.180	1.197	0.000
School-level									
proportion Asian				1.826	6.211	0.000	1.718	5.574	0.000
proportion black				1.177	3.243	0.000	1.144	3.139	0.000
proportion Latino				1.661	5.267	0.000	1.603	4.969	0.000
proportion Native American				0.506	1.659	0.068	0.460	1.584	0.223
proportion ELL				-1.526	0.217	0.000	-1.550	0.212	0.000
proportion FRL				-0.511	0.600	0.000	-0.475	0.622	0.000
average attendance				0.021	1.022	0.000	0.021	1.021	0.000
proportion transferred in the last year				0.441	1.554	0.069	0.424	1.528	0.081
average math proficiency level				-0.692	0.501	0.018	-0.662	0.516	0.024
average reading proficiency level				0.767	2.152	0.006	0.736	2.088	0.009
proportion teachers of color				0.829	2.292	0.000	2.364	10.631	0.000
proportion teachers with masters' degrees				0.142	1.153	0.128	0.115	1.121	0.221
proportion bilingual teachers				-0.016	0.984	0.979	-0.139	0.870	0.821
Student-school Interactions									
Asian x proportion Asian							-6.836	0.001	0.000
Black x proportion Black							-0.139	0.870	0.247
Latino x proportion Latino							-0.543	0.581	0.001
Native American x proportion Native American							0.127	1.136	0.751
Asian x proportion teachers of color							-2.559	0.077	0.000
black x proportion teachers of color							-1.705	0.182	0.000
Latino x proportion teachers of color							-0.871	0.418	0.002
Native American x proportion teachers of color							-3.281	0.038	0.000

Table 9. Autism, Without Test Scores

	Model 5			Model 6			Model 7		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level									
constant	-5.777	0.003	0.000	-5.723	0.003	0.000	-5.738	0.003	0.000
male	1.745	5.723	0.000	1.743	5.714	0.000	1.743	5.714	0.000
Asian	-0.139	0.870	0.041	-0.172	0.842	0.013	0.116	1.123	0.266
black	-0.568	0.567	0.000	-0.606	0.546	0.000	-0.389	0.678	0.000
Latino	-0.251	0.778	0.000	-0.277	0.758	0.000	-0.035	0.966	0.613
Native American	0.060	1.062	0.471	0.030	1.031	0.726	0.132	1.141	0.197
ELL	-0.952	0.386	0.000	-0.982	0.375	0.000	-0.933	0.393	0.000
FRL	0.216	1.241	0.000	0.221	1.247	0.000	0.219	1.245	0.000
attendance	-0.007	0.993	0.000	-0.010	0.990	0.000	-0.010	0.990	0.000
transferred in the last year	-0.171	0.843	0.015	-0.163	0.849	0.021	-0.172	0.842	0.015
School-level									
proportion Asian				1.870	6.490	0.001	1.791	5.998	0.002
proportion black				0.871	2.389	0.000	1.082	2.952	0.000
proportion Latino				0.415	1.514	0.185	0.658	1.930	0.049
proportion Native American				1.007	2.739	0.003	1.040	2.830	0.027
proportion ELL				0.520	1.682	0.266	0.316	1.372	0.504
proportion FRL				-0.166	0.847	0.218	-0.131	0.877	0.330
average attendance				0.033	1.034	0.000	0.032	1.033	0.000
proportion transferred in the last year				-0.817	0.442	0.062	-0.909	0.403	0.039
average math proficiency level				-0.483	0.617	0.194	-0.395	0.674	0.289
average reading proficiency level				0.264	1.302	0.459	0.177	1.194	0.620
proportion teachers of color				-0.990	0.371	0.003	0.199	1.220	0.650
proportion teachers with masters' degrees				0.038	1.039	0.741	-0.013	0.987	0.910
proportion bilingual teachers				0.479	1.615	0.538	0.638	1.893	0.417
Student-school Interactions									
Asian x proportion Asian							-1.525	0.218	0.100
Black x proportion Black							-0.803	0.448	0.001
Latino x proportion Latino							-0.861	0.423	0.005
Native American x proportion Native American							0.192	1.212	0.728
Asian x proportion teachers of color							-3.675	0.025	0.000
black x proportion teachers of color							-0.596	0.551	0.231
Latino x proportion teachers of color							-1.867	0.155	0.001
Native American x proportion teachers of color							-3.549	0.029	0.012

Table 10. Specific Learning Disability, Without Test Scores

	Model 5			Model 6			Model 7		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level									
constant	-3.971	0.019	0.000	-4.791	0.008	0.000	-4.798	0.008	0.000
male	0.583	1.792	0.000	0.584	1.793	0.000	0.583	1.792	0.000
Asian	-0.560	0.571	0.000	-0.532	0.587	0.000	-0.501	0.606	0.000
black	0.317	1.372	0.000	0.373	1.452	0.000	0.478	1.613	0.000
Latino	0.020	1.020	0.408	0.054	1.056	0.024	0.075	1.078	0.017
Native American	0.309	1.363	0.000	0.316	1.371	0.000	0.338	1.402	0.000
ELL	-0.041	0.960	0.131	-0.052	0.949	0.054	-0.052	0.950	0.059
FRL	0.884	2.422	0.000	0.886	2.426	0.000	0.885	2.422	0.000
attendance	-0.014	0.986	0.000	-0.015	0.985	0.000	-0.015	0.985	0.000
transferred in the last year	0.047	1.048	0.086	0.050	1.051	0.069	0.049	1.050	0.075
School-level									
proportion Asian				-2.297	0.101	0.000	-2.553	0.078	0.000
proportion black				-0.768	0.464	0.000	-0.685	0.504	0.000
proportion Latino				-1.462	0.232	0.000	-1.576	0.207	0.000
proportion Native American				-0.280	0.756	0.287	-0.279	0.757	0.393
proportion ELL				1.554	4.730	0.000	1.579	4.851	0.000
proportion FRL				0.160	1.174	0.124	0.178	1.195	0.087
average attendance				-0.013	0.987	0.001	-0.013	0.987	0.001
proportion transferred in the last year				0.176	1.192	0.479	0.155	1.168	0.531
average math proficiency level				0.039	1.039	0.887	0.040	1.041	0.883
average reading proficiency level				1.088	2.969	0.000	1.087	2.965	0.000
proportion teachers of color				0.899	2.458	0.000	1.832	6.248	0.000
proportion teachers with masters' degrees				0.071	1.073	0.429	0.063	1.065	0.479
proportion bilingual teachers				-1.393	0.248	0.022	-1.554	0.211	0.011
Student-school Interactions									
Asian x proportion Asian							0.736	2.088	0.112
Black x proportion Black							-0.095	0.909	0.433
Latino x proportion Latino							-0.312	0.732	0.026
Native American x proportion Native American							-0.203	0.816	0.498
Asian x proportion teachers of color							-2.563	0.077	0.000
black x proportion teachers of color							-1.287	0.276	0.000
Latino x proportion teachers of color							0.094	1.098	0.729
Native American x proportion teachers of color							-0.380	0.684	0.487

Table 11. Emotional Disorder, Without Test Scores

	Model 5			Model 6			Model 7		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level									
constant	-5.789	0.003	0.000	-6.067	0.002	0.000	-6.076	0.002	0.000
male	1.282	3.604	0.000	1.286	3.617	0.000	1.285	3.616	0.000
Asian	-1.200	0.301	0.000	-1.152	0.316	0.000	-0.790	0.454	0.000
black	0.438	1.550	0.000	0.548	1.729	0.000	0.685	1.984	0.000
Latino	-0.239	0.787	0.000	-0.162	0.850	0.000	-0.032	0.969	0.578
Native American	0.651	1.917	0.000	0.644	1.904	0.000	0.660	1.935	0.000
ELL	-1.394	0.248	0.000	-1.419	0.242	0.000	-1.370	0.254	0.000
FRL	1.258	3.517	0.000	1.278	3.589	0.000	1.276	3.582	0.000
attendance	-0.032	0.968	0.000	-0.033	0.967	0.000	-0.033	0.967	0.000
transferred in the last year	0.777	2.176	0.000	0.769	2.158	0.000	0.766	2.150	0.000
School-level									
proportion Asian				-2.391	0.092	0.000	-2.572	0.076	0.000
proportion black				-0.685	0.504	0.000	-0.245	0.783	0.230
proportion Latino				-2.481	0.084	0.000	-2.422	0.089	0.000
proportion Native American				0.864	2.372	0.003	0.745	2.106	0.057
proportion ELL				3.183	24.120	0.000	3.115	22.544	0.000
proportion FRL				-0.513	0.599	0.000	-0.485	0.616	0.000
average attendance				0.017	1.017	0.000	0.016	1.016	0.000
proportion transferred in the last year				1.490	4.439	0.000	1.434	4.197	0.000
average math proficiency level				-0.708	0.493	0.029	-0.668	0.513	0.039
average reading proficiency level				1.037	2.821	0.001	0.992	2.697	0.001
proportion teachers of color				-0.107	0.898	0.702	0.627	1.872	0.139
proportion teachers with masters' degrees				0.487	1.628	0.000	0.457	1.579	0.000
proportion bilingual teachers				-0.358	0.699	0.636	-0.340	0.711	0.655
Student-school Interactions									
Asian x proportion Asian							-3.833	0.022	0.015
Black x proportion Black							-0.744	0.475	0.000
Latino x proportion Latino							-0.866	0.421	0.002
Native American x proportion Native American							0.187	1.206	0.618
Asian x proportion teachers of color							-2.059	0.128	0.124
black x proportion teachers of color							-0.504	0.604	0.221
Latino x proportion teachers of color							-0.584	0.558	0.252
Native American x proportion teachers of color							-1.184	0.306	0.123

Table 12. Intellectual Disability, Without Test Scores

	Model 5			Model 6			Model 7		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level									
constant	-5.386	0.005	0.000	-5.195	0.006	0.000	-6.076	0.002	0.000
male	0.350	1.419	0.000	0.351	1.420	0.000	0.350	1.419	0.000
Asian	-0.280	0.756	0.000	-0.260	0.771	0.000	-0.279	0.757	0.130
black	0.393	1.481	0.000	0.399	1.490	0.000	0.560	1.751	0.000
Latino	-0.039	0.962	0.392	-0.013	0.987	0.779	0.031	1.031	0.619
Native American	0.094	1.099	0.221	0.098	1.103	0.213	0.250	1.284	0.008
ELL	-0.456	0.634	0.000	-0.470	0.625	0.000	-0.456	0.634	0.000
FRL	0.936	2.550	0.000	0.938	2.555	0.000	0.932	2.540	0.000
attendance	-0.016	0.984	0.000	-0.016	0.984	0.000	-0.016	0.984	0.000
transferred in the last year	0.310	1.363	0.515	0.030	1.030	0.536	0.027	1.027	0.570
School-level									
proportion Asian				-1.444	0.236	0.029	-1.735	0.176	0.010
proportion black				-0.523	0.593	0.009	-0.558	0.572	0.016
proportion Latino				-1.470	0.230	0.000	-1.613	0.199	0.000
proportion Native American				-0.319	0.727	0.421	-0.184	0.832	0.746
proportion ELL				1.700	5.474	0.001	-0.456	0.634	0.000
proportion FRL				0.139	1.149	0.370	0.932	2.540	0.000
average attendance				0.000	1.000	0.985	0.000	1.000	0.969
proportion transferred in the last year				0.650	1.916	0.114	-0.652	0.521	0.113
average math proficiency level				-0.176	0.839	0.679	-0.166	0.847	0.697
average reading proficiency level				0.005	1.005	0.990	0.000	1.000	0.999
proportion teachers of color				1.245	3.473	0.000	2.692	14.761	0.000
proportion teachers with masters' degrees				0.029	1.029	0.831	0.016	1.016	0.904
proportion bilingual teachers				-1.378	0.252	0.116	-1.531	0.216	0.081
Student-school Interactions									
Asian x proportion Asian							0.112	1.119	0.898
Black x proportion Black							-0.018	0.982	0.924
Latino x proportion Latino							-0.346	0.708	0.171
Native American x proportion Native American							-0.184	0.832	0.746
Asian x proportion teachers of color							-0.631	0.532	0.234
black x proportion teachers of color							-1.821	0.162	0.000
Latino x proportion teachers of color							-0.424	0.654	0.296
Native American x proportion teachers of color							-3.776	0.023	0.003

Table 13. Any Disability, Composition Measure as Percent White

	Model 8			Model 9			Model 10			Model 11		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-2.289	0.101	0.000	1.938	6.945	0.000	0.040	1.041	0.804	0.655	1.925	0.000
male	0.769	2.157	0.000	0.780	2.182	0.000	0.780	2.181	0.000	0.780	2.181	0.000
Asian	-0.441	0.643	0.000	-0.435	0.647	0.000	-0.428	0.652	0.000	-1.334	0.263	0.000
black	0.519	1.680	0.000	-0.394	0.674	0.000	-0.361	0.697	0.000	-1.093	0.335	0.000
Latino	0.067	1.069	0.000	-0.266	0.767	0.000	-0.259	0.772	0.000	-0.893	0.410	0.000
Native American	0.520	1.683	0.000	0.029	1.029	0.445	0.022	1.023	0.556	-0.886	0.412	0.000
ELL				-0.839	0.432	0.000	-0.836	0.433	0.000	-0.815	0.443	0.000
FRL				0.372	1.451	0.000	0.376	1.457	0.000	0.371	1.450	0.000
attendance				-0.014	0.986	0.000	-0.016	0.985	0.000	-0.016	0.985	0.000
transferred in the last year				-0.155	0.856	0.000	-0.143	0.867	0.000	-0.151	0.860	0.000
math proficiency level				-0.516	0.597	0.000	-0.521	0.594	0.000	-0.520	0.594	0.000
reading proficiency level				-0.981	0.375	0.000	-0.989	0.372	0.000	-0.991	0.371	0.000
School-level												
proportion white							-0.655	0.519	0.000	-1.180	0.307	0.000
proportion ELL							-0.232	0.793	0.175	-0.646	0.524	0.000
proportion FRL							0.209	1.233	0.008	0.248	1.282	0.002
average attendance							0.021	1.021	0.000	0.020	1.020	0.000
proportion transferred in the last year							0.621	1.861	0.004	0.506	1.659	0.021
average math proficiency level							1.236	3.442	0.000	1.242	3.464	0.000
average reading proficiency level							1.640	5.154	0.000	1.474	4.367	0.000
proportion teachers of color							0.446	1.562	0.008	0.889	2.433	0.000
proportion teachers with masters' degrees							0.042	1.043	0.530	-0.016	0.984	0.814
proportion bilingual teachers							-0.461	0.631	0.274	-0.156	0.856	0.716
Student-school Interactions												
Asian x proportion white										1.295	3.650	0.000
Black x proportion white										1.189	3.285	0.000
Latino x proportion white										0.887	2.428	0.000
Native American x proportion white										1.199	3.315	0.000
Asian x proportion teachers of color										-0.544	0.581	0.297
black x proportion teachers of color										-0.149	0.861	0.527
Latino x proportion teachers of color										-0.087	0.917	0.764
Native American x proportion teachers of color										0.049	1.050	0.943

Table 14. Other Health Impairment, Composition Measure as Percent White

	Model 8			Model 9			Model 10			Model 11		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-4.506	0.011	0.000	0.262	1.299	0.000	-0.615	0.541	0.025	-0.079	0.924	0.787
male	0.902	2.463	0.000	0.921	2.513	0.000	0.921	2.511	0.000	0.921	2.512	0.000
Asian	-1.049	0.350	0.000	-0.867	0.420	0.000	-0.916	0.400	0.000	-3.003	0.050	0.000
black	0.717	2.049	0.000	-0.312	0.732	0.000	-0.440	0.644	0.000	-0.990	0.371	0.000
Latino	-0.125	0.882	0.000	-0.353	0.703	0.000	-0.422	0.656	0.000	-1.231	0.292	0.000
Native American	0.403	1.497	0.000	-0.208	0.812	0.014	-0.294	0.745	0.001	-2.100	0.122	0.000
ELL				-1.247	0.287	0.000	-1.230	0.292	0.000	-1.205	0.300	0.000
FRL				0.231	1.259	0.000	0.240	1.271	0.000	0.229	1.258	0.000
attendance				-0.018	0.982	0.000	-0.020	0.981	0.000	-0.020	0.981	0.000
transferred in the last year				-0.210	0.811	0.000	-0.204	0.815	0.000	-0.215	0.807	0.000
math proficiency level				-0.700	0.497	0.000	-0.707	0.493	0.000	-0.705	0.494	0.000
reading proficiency level				-0.918	0.399	0.000	-0.929	0.395	0.000	-0.931	0.394	0.000
School-level												
proportion white							-1.923	0.146	0.000	-2.443	0.087	0.000
proportion ELL							-1.455	0.233	0.000	-1.906	0.149	0.000
proportion FRL							-0.271	0.763	0.051	-0.207	0.813	0.136
average attendance							0.010	1.010	0.197	0.009	1.009	0.242
proportion transferred in the last year							0.247	1.280	0.487	0.149	1.161	0.675
average math proficiency level							1.614	5.023	0.000	1.632	5.114	0.000
average reading proficiency level							1.539	4.660	0.000	1.425	4.159	0.001
proportion teachers of color							0.921	2.513	0.000	1.204	3.335	0.003
proportion teachers with masters' degrees							0.126	1.134	0.284	0.076	1.079	0.517
proportion bilingual teachers							0.791	2.206	0.259	0.967	2.630	0.174
Student-school Interactions												
Asian x proportion white										2.939	18.906	0.000
Black x proportion white										0.975	2.652	0.000
Latino x proportion white										1.128	3.089	0.000
Native American x proportion white										2.404	11.069	0.000
Asian x proportion teachers of color										2.172	8.778	0.057
black x proportion teachers of color										-0.301	0.740	0.441
Latino x proportion teachers of color										0.788	2.199	0.143
Native American x proportion teachers of color										2.138	8.484	0.114

Table 15. Other Health Impairment, Composition Measure as Percent White

	Model 8			Model 9			Model 10			Model 11		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-5.718	0.003	0.000	-1.772	0.170	0.000	-3.189	0.041	0.000	-2.623	0.073	0.000
male	1.737	5.681	0.000	1.772	5.882	0.000	1.772	5.885	0.000	1.773	5.889	0.000
Asian	-0.527	0.591	0.000	-0.138	0.871	0.207	-0.148	0.863	0.177	-1.314	0.269	0.011
black	-0.469	0.625	0.000	-1.341	0.262	0.000	-1.284	0.277	0.000	-2.162	0.115	0.000
Latino	-0.529	0.589	0.000	-0.523	0.593	0.000	-0.553	0.575	0.000	-1.520	0.219	0.000
Native American	0.137	1.147	0.096	-0.233	0.792	0.060	-0.275	0.759	0.028	-1.017	0.362	0.072
ELL				-1.581	0.206	0.000	-1.609	0.200	0.000	-1.547	0.213	0.000
FRL				-0.129	0.879	0.000	-0.110	0.896	0.004	-0.114	0.893	0.003
attendance				0.004	1.004	0.210	-0.002	0.998	0.603	-0.001	0.999	0.629
transferred in the last year				-0.423	0.655	0.000	-0.415	0.660	0.000	-0.429	0.651	0.000
math proficiency level				-0.431	0.650	0.000	-0.431	0.650	0.000	-0.431	0.650	0.000
reading proficiency level				-0.879	0.415	0.000	-0.879	0.415	0.000	-0.881	0.415	0.000
School-level												
proportion white							-1.454	0.234	0.000	-1.944	0.143	0.000
proportion ELL							0.361	1.434	0.357	-0.006	0.994	0.988
proportion FRL							-0.121	0.886	0.479	-0.067	0.935	0.697
average attendance							0.025	1.026	0.030	0.025	1.025	0.037
proportion transferred in the last year							1.232	3.428	0.034	1.001	2.722	0.091
average math proficiency level							1.546	4.694	0.002	1.585	4.880	0.002
average reading proficiency level							1.794	6.012	0.002	1.624	5.074	0.004
proportion teachers of color							-0.874	0.417	0.037	-0.435	0.648	0.481
proportion teachers with masters' degrees							-0.105	0.901	0.468	-0.186	0.831	0.200
proportion bilingual teachers							-0.205	0.815	0.826	0.505	1.657	0.597
Student-school Interactions												
Asian x proportion white										1.559	4.756	0.013
Black x proportion white										1.425	4.160	0.000
Latino x proportion white										1.560	4.760	0.000
Native American x proportion white										1.052	2.864	0.123
Asian x proportion teachers of color										0.686	1.987	0.683
black x proportion teachers of color										0.333	1.395	0.661
Latino x proportion teachers of color										-1.024	0.359	0.367
Native American x proportion teachers of color										-0.999	0.368	0.686

Table 16. Specific Learning Disability, Composition Measure as Percent White

	Model 8			Model 9			Model 10			Model 11		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-3.62	0.027	0.000	2.440	11.476	0.000	-0.946	0.388	0.000	-0.566	0.568	0.021
male	0.56	1.759	0.000	0.489	1.630	0.000	0.488	1.628	0.000	0.488	1.628	0.000
Asian	-0.36	0.700	0.000	-0.653	0.521	0.000	-0.602	0.548	0.000	-0.601	0.548	0.031
black	0.69	2.001	0.000	-0.647	0.524	0.000	-0.483	0.617	0.000	-0.897	0.408	0.000
Latino	0.34	1.402	0.000	-0.238	0.788	0.000	-0.177	0.838	0.000	-0.551	0.576	0.000
Native American	0.60	1.816	0.000	-0.069	0.933	0.237	-0.052	0.950	0.377	-1.037	0.355	0.000
ELL				-0.813	0.444	0.000	-0.814	0.443	0.000	-0.808	0.446	0.000
FRL				0.328	1.388	0.000	0.338	1.402	0.000	0.335	1.398	0.000
attendance				0.007	1.007	0.000	0.003	1.003	0.011	0.003	1.003	0.009
transferred in the last year				-0.454	0.635	0.000	-0.424	0.654	0.000	-0.428	0.652	0.000
math proficiency level				-0.679	0.507	0.000	-0.684	0.505	0.000	-0.684	0.505	0.000
reading proficiency level				-1.369	0.254	0.000	-1.384	0.251	0.000	-1.384	0.251	0.000
School-level												
proportion white							0.189	1.208	0.157	-0.155	0.856	0.322
proportion ELL							0.330	1.390	0.160	0.024	1.025	0.920
proportion FRL							0.485	1.624	0.000	0.508	1.662	0.000
average attendance							-0.013	0.987	0.047	-0.013	0.987	0.046
proportion transferred in the last year							-0.558	0.572	0.096	-0.606	0.546	0.073
average math proficiency level							1.606	4.984	0.000	1.609	4.997	0.000
average reading proficiency level							2.242	9.412	0.000	2.159	8.661	0.000
proportion teachers of color							0.827	2.287	0.000	0.949	2.583	0.013
proportion teachers with masters' degrees							0.073	1.076	0.427	0.047	1.048	0.614
proportion bilingual teachers							-1.134	0.322	0.000	-1.077	0.341	0.063
Student-school Interactions												
Asian x proportion white										0.183	1.200	0.592
Black x proportion white										0.653	1.921	0.000
Latino x proportion white										0.462	1.587	0.007
Native American x proportion white										1.225	3.406	0.001
Asian x proportion teachers of color										-3.279	0.038	0.002
black x proportion teachers of color										-0.060	0.942	0.879
Latino x proportion teachers of color										0.462	1.587	0.325
Native American x proportion teachers of color										1.713	5.546	0.115

Table 17. Specific Learning Disability, Composition Measure as Percent White

	Model 8			Model 9			Model 10			Model 11		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-5.167	0.006	0.000	-2.091	0.124	0.000	-3.649	0.026	0.000	-2.821	0.060	0.000
male	1.242	3.461	0.000	1.354	3.873	0.000	1.351	3.863	0.000	1.351	3.860	0.000
Asian	-1.611	0.200	0.000	-1.134	0.322	0.000	-1.059	0.347	0.000	-2.639	0.071	0.001
black	1.074	2.928	0.000	-0.176	0.839	0.000	0.060	1.062	0.183	-1.000	0.368	0.000
Latino	-0.247	0.781	0.000	-0.476	0.621	0.000	-0.381	0.683	0.000	-1.200	0.301	0.000
Native American	1.141	3.130	0.000	0.341	1.407	0.000	0.445	1.561	0.000	0.111	1.118	0.742
ELL				-1.838	0.159	0.000	-1.834	0.160	0.000	-1.799	0.165	0.000
FRL				0.939	2.556	0.000	0.966	2.627	0.000	0.957	2.605	0.000
attendance				-0.037	0.964	0.000	-0.041	0.960	0.000	-0.041	0.960	0.000
transferred in the last year				0.422	1.525	0.000	0.422	1.525	0.000	0.419	1.520	0.000
math proficiency level				-0.518	0.596	0.000	-0.523	0.593	0.000	-0.522	0.593	0.000
reading proficiency level				-0.615	0.540	0.000	-0.626	0.535	0.000	-0.628	0.534	0.000
School-level												
proportion white							0.775	2.171	0.000	0.088	1.092	0.683
proportion ELL							1.067	2.907	0.001	0.614	1.848	0.068
proportion FRL							-0.145	0.865	0.316	-0.108	0.897	0.453
average attendance							0.041	1.042	0.000	0.042	1.043	0.000
proportion transferred in the last year							1.298	3.661	0.000	1.188	3.282	0.001
average math proficiency level							0.542	1.720	0.180	0.557	1.746	0.167
average reading proficiency level							0.317	1.373	0.467	0.083	1.087	0.849
proportion teachers of color							-0.077	0.926	0.799	-0.402	0.669	0.469
proportion teachers with masters' degrees							0.464	1.590	0.000	0.392	1.480	0.001
proportion bilingual teachers							-0.429	0.651	0.579	0.209	1.232	0.790
Student-school Interactions												
Asian x proportion white										2.009	7.459	0.040
Black x proportion white										1.540	4.666	0.000
Latino x proportion white										1.147	3.150	0.000
Native American x proportion white										0.312	1.367	0.444
Asian x proportion teachers of color										1.946	7.003	0.404
black x proportion teachers of color										0.996	2.708	0.086
Latino x proportion teachers of color										-0.014	0.987	0.988
Native American x proportion teachers of color										0.857	2.356	0.505

Table 18. Intellectual Disability, Composition Measure as Percent White

	Model 8			Model 9			Model 10			Model 11		
	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p	coef	exp(coef)	p
Student-level												
constant	-5.023	1.392	0.000	-1.232	0.292	0.000	-1.861	0.156	0.000	-1.331	0.264	0.001
male	0.331	1.392	0.000	0.276	1.318	0.000	0.273	1.313	0.000	0.271	1.312	0.000
Asian	-0.294	0.745	0.000	-0.253	0.776	0.017	-0.213	0.808	0.045	-0.843	0.430	0.051
black	0.793	2.210	0.000	-0.151	0.860	0.004	-0.086	0.917	0.138	-0.668	0.512	0.001
Latino	0.112	1.119	0.004	-0.249	0.780	0.000	-0.218	0.804	0.002	-1.131	0.323	0.000
Native American	0.419	1.520	0.000	-0.334	0.716	0.006	-0.306	0.737	0.013	-0.703	0.495	0.234
ELL				-1.030	0.357	0.000	-1.032	0.356	0.000	-1.002	0.367	0.000
FRL				0.647	1.910	0.000	0.645	1.906	0.000	0.634	1.884	0.000
attendance				-0.013	0.987	0.000	-0.015	0.985	0.000	-0.015	0.985	0.000
transferred in the last year				-0.176	0.839	0.013	-0.162	0.850	0.023	-0.169	0.844	0.018
math proficiency level				-0.105	0.900	0.000	-0.104	0.901	0.000	-0.102	0.903	0.000
reading proficiency level				-1.190	0.304	0.000	-1.198	0.302	0.000	-1.198	0.302	0.000
School-level												
proportion white							0.449	1.566	0.045	-0.037	0.964	0.890
proportion ELL							0.313	1.367	0.421	-0.042	0.959	0.916
proportion FRL							0.350	1.419	0.061	0.404	1.498	0.031
average attendance							0.030	1.031	0.007	0.030	1.030	0.008
proportion transferred in the last year							-0.947	0.388	0.095	-1.069	0.344	0.062
average math proficiency level							-0.515	0.598	0.327	-0.495	0.610	0.347
average reading proficiency level							0.548	1.729	0.327	0.408	1.504	0.467
proportion teachers of color							0.889	2.432	0.015	1.392	4.024	0.016
proportion teachers with masters' degrees							0.211	1.235	0.185	0.149	1.161	0.351
proportion bilingual teachers							-0.829	0.437	0.377	-0.486	0.615	0.609
Student-school Interactions												
Asian x proportion white										0.761	2.141	0.161
Black x proportion white										0.982	2.669	0.001
Latino x proportion white										1.322	3.751	0.000
Native American x proportion white										0.682	1.978	0.335
Asian x proportion teachers of color										0.502	1.652	0.676
black x proportion teachers of color										-0.359	0.698	0.534
Latino x proportion teachers of color										0.365	1.441	0.652
Native American x proportion teachers of color										-3.043	0.048	0.214

Chapter 5

The Context of Teachers' Racialized and Gendered Perceptions of Disability and Giftedness

The Racial Context of Teachers' Racialized and Gendered Perceptions of Exceptionality

In this chapter, I bring together the questions of Chapters 3 and 4 to examine whether and how the racial/ethnic context of the school shapes the racialized and gendered suspicions of disability and giftedness by elementary school teachers. Using school-level racial composition data and an experimental survey design, I examine whether a student's race/ethnicity, nativity, and gender affect teacher decisions to refer for exceptionality testing differently in schools with different racial/ethnic compositions. I find that in schools with more white students, teachers are less likely to perceive academic challenges as disability when evaluating a boy of color. Further, while white boys experience decreased likelihood of referral for behavior problems in schools with more white students, boys of color experience no such decrease. Conversely, when they work in schools with more white students, teachers are more likely to refer girls of color when they have academic challenges, and less likely to be referred when they have behavioral challenges. I argue that these findings suggest some support for contextual effects explained by racial-bias-driven frog-pond effects. The divergent findings by gender and race/ethnicity suggest that boys and girls of color experience very different biases by teachers.

School Context Matters

In the pursuit of understanding why students of color are disproportionately represented in special education and gifted services in the United States, a limited but growing body of literature has identified the importance of school context. Most of these studies have examined school context as a possible confounder in the positive association between being a student of color and being identified with an exceptionality, though estimates of the direction and existence

of the effects vary (Hibel et al., 2010; Sullivan & Bal, 2013). These studies rely on the assumption that schools with different racial/ethnic compositions treat the identification of students with disabilities in different ways, regardless of individual students' racial/ethnic backgrounds. For instance, Hibel and colleagues hypothesize that schools with fewer students of color, and therefore higher levels of academic achievement and more resources, are more likely to allocate resources to intervention and identification of disabilities.

Other research examines the possibility that school context matters for racial disproportionality in special education in different ways for different racial/ethnic groups. Most of this research examines district-level disproportionate representation of students of color in special education as predicted by the racial/ethnic composition of the district (Eitle, 2002; Hosp & Reschly, 2004; D. Oswald et al., 1999; Serwatka et al., 1995). In Chapter 4, I use Wisconsin public school data to examine how the relationship between student-level race/ethnicity and disability status might vary by school racial/ethnic composition. I find that school racial/ethnic composition predicts disability status differentially for students of different racial/ethnic backgrounds, and moreover, that the patterns vary depending on the disability category.

Why might racial/ethnic composition affect the likelihood that students of different racial/ethnic backgrounds are placed in special education and gifted services? In Chapter 4, I outline three possible explanations: social-psychological effects, racial-bias-driven frog-pond effects, and racial/ethnic conflict and competition.

Social-psychological effects. Under the hypothesized social-psychological effects, students of color experience stereotype threat, greater social isolation, and lower attachment to school when they have fewer same race peers (Goldsmith, 2004; Inzlicht & Ben-Zeev, 2000; Johnson et al., 2001; O'Connor & Fernandez, 2006; Steele, 1997; Steele & Aronson, 1995;

Tyson et al., 2005), translating to a greater need for special education services when they are in schools with greater proportions of white students.

Racial-bias-driven frog-pond effects. For the hypothesis of racial-bias-driven frog-pond effects, I draw on Crosnoe's (2009) interpretation of frog-pond effects, which originally refer to the social-psychological mechanisms in which students develop self-concepts about their abilities by comparing themselves to their classmates (Davis, 1966), but has expanded to refer to others' views of students (Attewell, 2001; Crosnoe, 2009; Espenshade et al., 2005; Powell, 1985). Crosnoe argues that teachers evaluate students relative to their peers via demographic statuses linked to achievement, which I posit are constructed partially by racial/ethnic bias. Therefore, when students attend schools with fewer same-race peers, racial/ethnic and gender stereotypes become more salient in teachers' evaluations of their skills and behaviors. Under this theory, when white students are surrounded by more students of color, teachers' racialized expectations for them – and their peers to whom they are compared – may be enhanced, such that white students are incorrectly seen as higher socioeconomic status and more academically capable (Morris, 2005). In this case, these students are seen as falling below the high expectations their teachers have for them, making them more likely to be identified with a disability when they demonstrate academic challenges. Boys of color, under this theory, are more likely to be identified with a disability when they exhibit behavioral problems and are surrounded by fewer same-race peers, as their perceived behaviors appear more problematic in comparison to the perceptions of their white peers' behaviors. Girls of color, too, may be perceived as especially problematic when they defy expectations of obedience (Chesney-Lind, 1989; Grant, 1984; 1994; Morris, 2007).

Racial/ethnic conflict and competition. The last of the three possible mechanisms of moderation by racial/ethnic composition to be discussed is racial/ethnic conflict and competition. Under this hypothesized mechanism, competition over scarce educational resources raises tensions between racial/ethnic groups, especially under conditions in which white people perceive an increased population of color (Blalock, 1967; Blumer, 1958; Bobo, 1983; King & Wheelock, 2007; Quillian, 1995). White families may then seek to segregate their children from their peers of color through between-school segregation and tracking that may exacerbate inequalities (An & Gamoran, 2009; Braddock, 1980; Logan et al., 2008; Lucas & Berends, 2002; Mickelson, 2001; Oakes, 1985; Renzulli & Evans, 2005). White families may engage in similar behaviors to maintain resources for their children in regard to special education and gifted services (Eitle, 2002; McGrath & Kuriloff, 1999; Staiger, 2004). Therefore, I hypothesized in Chapter 4 that students of color would be more likely to be placed in less advantaged, more exclusionary categories of disability when they are surrounded by more white peers, while white students would be more likely to be placed in more advantaged categories of disability when they attend schools with fewer white peers.

In Chapter 4, I reported that for white students, attending schools with more peers of color increases their placement in more-advantaged disabilities. For students of color, attending schools with more same-race peers decreases their placement in special education, excepting the outcome of Intellectual Disabilities. These findings most consistently support the hypotheses of racial-bias-driven frog-pond effects and racial/ethnic conflict and competition. Yet as a descriptive data analysis with a limited set of variables available, my ability to interpret the results – of *how* school context matters – was limited.

School Context and Teacher Referrals to Exceptionality Testing

As I discussed in Chapter 3, teacher referrals play an important role in who is identified with a disability. Teachers are the most common source of referrals for exceptionality testing, and their referrals and suspicions of disability category are usually confirmed by the pre-referral and testing process (Harry & Klingner, 2007; Klingner & Harry, 2006; Lloyd et al., 1991; Mehan et al., 1986). While many factors outside of the school may affect differential rates of exceptionalities by race/ethnicity and gender (Hibel et al., 2010; Shifrer et al., 2011), my research suggests that teacher decisions to refer are affected by student race/ethnicity and gender. This likely contributes to racial/ethnic and gender disparities among the students that are eventually identified. In my first survey experiment in a large, east coast city, I found that teachers are more likely to intervene with exceptionality pre-referral processes for white boys with academic challenges and giftedness, while they are more likely to choose a similar intervention for boys of color with behavioral challenges (Fish 2012). In Chapter 3 of the dissertation, I used a similar design, but included experimental variation by gender, and utilize a sample of teachers in schools across Wisconsin. I found that boys of color are more likely than their white peers to be referred to special education pre-referral processes when they demonstrate behavioral challenges.

If the mechanisms hypothesized in Chapter 4 are correct, then they would likely be reflected as moderators of race/ethnicity and gender effects in teachers' decisions to refer to exceptionality testing by racial/ethnic composition. In this chapter, I test for this moderation to better answer the question in Chapter 3, of how school-level racial/ethnic composition might shape the intersection of exceptionality with race/ethnicity and gender.

RESEARCH QUESTION

How does school-level racial/ethnic composition moderate race/ethnicity and gender effects in teachers' suspicion of disability and giftedness? To answer this question, I examine variation in the experimental effects from Chapter 3 across schools with varying racial/ethnic compositions.

HYPOTHESES

Among the hypothesized mechanisms from Chapter 4, only two are relevant to the analyses in this chapter: racial-bias-driven frog-pond effects and racial/ethnic conflict and competition.

Racial-Bias-Driven Frog-Pond Effects

If frog-pond effects driven by racial/ethnic bias affect the placement of students of different racial/ethnic backgrounds and genders into special and gifted education, the present study is especially well-equipped to detect this pattern. This theory posits that teachers evaluate students' skills and behaviors relative to their peers. Therefore, when students stand out as a different race/ethnicity than the majority of their peers, race/ethnicity and gender effects should become more salient. Specifically, boys and girls of color would be more likely to be identified with a disability when they exhibit behavioral problems and are surrounded by fewer same-race peers, while white students would be more likely to be identified with a disability when they exhibit academic challenges or giftedness and are surrounded by more peers of color.

Racial/Ethnic Conflict and Competition

It is possible, if racial/ethnic competition drives the school context effects seen in Chapter 4, that they might also drive race/ethnicity and gender effects in teachers' perceptions of students' behaviors and skills. While this hypothesized mechanism mainly occurs through the actions of advantaged parents, research indicates that these parents bring about desired changes

by co-opting educational staff (Wells & Serna, 1996). Teachers in schools with more students of color may assume that the fictional white students of the vignettes will be accompanied by parents who will make more demands for their children, although this is unlikely because parent involvement is controlled in the experiment. Alternatively, teachers in schools with more white students may assume that their students' parents would complain about students they perceive as disruptive.

METHODS

To answer the question of whether and how school racial/ethnic composition might moderate the relation between student race/ethnicity and gender and teachers' referrals to special education, I combine school data from the Wisconsin Department of Instruction (DPI) with the factorial vignette survey as described in Chapter 2. The experimental survey allows for examination of the existence and nature of a causal relationship between student factors, including race/ethnicity, nativity, and gender, and teacher decisions to refer to testing for exceptionalities. The DPI data provides school-level information, specifically, school racial/ethnic composition. I merged the experimental survey data with a dataset from the Wisconsin Department of Instruction that includes all 895,791 students in all 2,214 schools. The final, merged dataset includes 111 schools. The descriptive statistics for these schools may be found in the Methods chapter.

Analytic Design

Both survey outcomes outlined in Chapter 2, the rating and ranking of teachers' perceived likelihood of referral to special education and giftedness testing, are tested for differences by race/ethnicity (with nativity as categories of Latino ethnicity), gender, and racial composition (proportion white, grand mean centered). Each category of exceptionality is

estimated separately. I use ordered logistic regression to capture the ordered nature of both response scales, and I account for the nested nature of the data with a multilevel mixed-effects ordered logistic regression. The randomized variables, gender, race/ethnicity (including nativity within Latino), are all tested as interactions. To test for the possibly moderation of the race/ethnicity and gender effects by school racial composition, the school's proportion of white students is also interacted with the two other factors. Random effects are specified for the school level. Note that although two vignettes are also clustered within a participant, it is not necessary to account for this, because participants could not respond to more than one vignette with the same exceptionality "symptoms," and each exceptionality category is estimated separately.

RESULTS

Perceiving Disability

Referring students with mild academic challenges to special education pre-referral.

Table 1 presents the outcome in which teachers rate their perceived likelihood of referring the child to special education pre-referral processes after reading the vignettes describing mild academic challenges. The academic challenges described are most consistent with Specific Learning Disability. Recall that in the test of the main experimental effects (Chapter 4), there were no significant differences by race/ethnicity and gender. For the models tested in this chapter, in which school racial/ethnic composition is tested for interactions with the randomized vignette factors, some variation is indicated. Here, vignettes inducing perceptions of white boys, black boys and girls, and Latino children from immigrant families do not appear to be perceived differently by teachers than those portraying white girls, nor do teachers' perceptions of them differ significantly depending on the school racial composition. For vignettes portraying Latino children from non-immigrant families, however, differences by gender and school racial

composition become apparent. When Latina non-immigrant girls attend schools with more white students, their odds of referral are significantly lower. Latino non-immigrant boys, by contrast, are less likely to be referred than both white boys and white girls when both are in schools with fewer white peers, and being in a school with more white peers has the opposite effect on their odds of referral than for Latina non-immigrant girls.

The results of the outcome in which teachers identify the five interventions that they would be most likely to use and rank them in likelihood of using them for the vignettes describing mild academic challenges can be found in Table 2. Here, only the three-way interaction of vignettes portraying black boys are significantly different than their peers, while the two-way interactions are large, with p-values between 0.05 and 0.10. While the school's proportion white increases the ranking of referral for black children generally, the interaction between race, gender and racial composition reveals that the ranking of black boys and black girls diverges depending on the proportion of white students in the school. The three-way interaction suggests that black boys only experience increased referrals for academic challenges relative to white students when they are in schools with smaller white populations, and that when the proportion of white students increases, black boys experience a reduction in their relative odds of referral. Black girls, alternatively, experience increased relative odds of referral when they are in schools with more white students, and decreased relative odds of referral when they are in schools with fewer white students.

Referring students with moderate behavior problems and low-average academic skills to special education pre-referral. The results for teachers rating their likelihood of referral for vignettes describing students with moderate behavior problems and low-average academic skills can be found in Table 3. Similar to the results for children exhibiting academic challenges,

race/ethnicity and gender interact with school racial composition in divergent and complex ways. The main effect of being black or Latino (only significantly for Latino immigrant) increases the odds that a teacher will refer a child to special education pre-referral services, as does the school's proportion white. Yet the interactions between race/ethnicity, gender, and racial composition of the school reveal that only white girls experience increased referrals for behavior problems when they are in schools with more white peers. In all schools, black and Latino boys experience less of the increases that girls of color experience for their race/ethnicity and less of the increase that white boys experience relative to white girls. Yet the full interaction indicates that they only experience this relative reduction when they are in schools with fewer white peers. Conversely, being in a school with more white peers reduces the relative odds of referral for girls of color and white boys relative to white girls in those same schools.

Table 4 presents the results for teachers choosing five interventions they are most likely to use and ranking them in order of likelihood to use them for students exhibiting moderate behavior problems and low-average academic skills. Here, participants in schools with greater proportions of white students rank special education referral higher in general. Yet, the interactions indicate that the relative increase in odds from racial composition is reversed for vignettes portraying Latino students. Vignettes portraying black students experience similar reductions in relative odds in schools with higher proportions of white students, as do Latino non-immigrant vignettes, though only marginally significantly. The non-significant effects that mirror significant effects in the rating outcome may be worthy of some cautious attention. Just like in the rating outcome, students of color all have a higher odds of referral relative to white students, and while girls of color have significantly reduced risk relative to white students when

they are in schools with more white students, the interaction effects here mirror, non-significantly, a dampening of this effect for boys of color in schools with more white students.

Perceiving Giftedness

The results pertaining to referring children that are potentially gifted/talented are found in Tables 5-9. Because of low numbers of teachers who listed refer to gifted/talented services at all in the ranking outcome, so that those models would not converge, only the rating outcome is discussed for this factor.

Referring students with mild behavior problems and above average academic skills to gifted/talented services. Table 5 displays the results from the outcome of teachers rating referral to gifted/talented services for the vignettes meant to suggest giftedness. Here, teachers rate Latino boys lower than their peers in referral to gifted services, with no variation by school racial/ethnic composition. Tables 6, 7, 8, and 9 examine the possibility that teachers suspect disability when students exhibit behavior and skills common to giftedness and vice versa (Morrison, 2001). None of the results revealed any significant differences by race/ethnicity, gender, or racial composition.

There were some interesting patterns for black boys with large effects p-values between 0.05 and 0.10. Table 7 presents results for the outcome of referral to gifted testing for vignettes suggesting learning disabilities. Here, black boys are less likely than their peers to be incorrectly perceived as possibly having giftedness when they are in schools with more white peers. Teachers also may be more likely to suspect disability among students of color presenting indicators of giftedness, as direction and size of effects for black and Latino immigrant students suggest in Table 8, and for black boys in schools with more white students in Table 9.

DISCUSSION

The findings presented here suggest some support for the racial-bias-driven frog-pond effects hypothesis, in which students who have fewer same-race peers are more likely to be judged by teachers in ways that reflect racial/ethnic biases and stereotypes, driving teachers' perceptions that external supports are needed for a student. More limited support is suggested for the racial/ethnic competition hypothesis, in which students of color are more likely to be placed in exclusionary, disadvantaged disability categories when they attend schools with more white students. My findings also suggest that the relations between race/ethnicity, gender, and exceptionality are complex and intersectional, and that school racial/ethnic composition has different implications for students along all three of these sets of social categories.

Identifying Specific Learning Disability. For which students, and in which schools, are academic challenges perceived as problematic, and outside the expected range of teachability (Gerber, 2005; Gerber & Semmel, 1984) for a student? The results of this study indicate that boys of color who struggle academically are more likely to be perceived as having a disability when they are in schools with fewer white students. This supports the racial-bias-driven frog-pond effects hypothesis, as teachers in schools with more white students may hold lower expectations for students of color. The finding also supports the racial competition hypothesis, as the white boys are more likely than their black peers to be referred for academic challenges when they attend schools with more white students; such a referral and diagnosis of Specific Learning Disability would likely provide more inclusive accommodations that would support the success of white students.

The effects of gender and race/ethnicity on referral are moderated differently by school racial/ethnic composition for girls of color than their male peers. My findings suggest that black and Latina girls' academic problems are more likely to be recognized and identified as

problematic when they are in schools with more white students. Although girls of color may experience a double disadvantage of being a racial/ethnic minority and female (Brown & Leaper, 2010; Riegle-Crumb & Humphries, 2012), research also suggests that they are perceived as higher skilled and better behaved than boys of color and also less competent than their white female peers (Grant, 1984; 1994). A limited body of research has explored the position of girls of color in schools, yet there is some evidence that girls in racially/ethnically diverse schools, as opposed to high-proportion black schools, are expected to have "ho-hum" average academic ability that goes unnoticed (Grant, 1984), which may explain why teachers in schools with more white students identified black girls' academic challenges as possible disabilities.

Identifying Emotional Disorder. For which students, and in which schools, are behavioral challenges perceived as problematic enough to warrant a referral to special education testing, and likely placement in a category of disability that results in exclusion and stigma? In schools with more white students, teachers are less likely to refer students with behavioral challenges when they are white boys or girls of color. While boys of color do not experience the increased referrals for behavioral problems predicted by both hypotheses, they do not benefit from the reductions that their peers experience as schools increase in the proportion of white students.

Again, the intersection of race/ethnicity, gender, and exceptionality is complicated. White girls exhibiting behavioral challenges are seen as more problematic when they are in schools with more white students, perhaps reflecting teachers' tendency to perceive their behavior and skills as better when they attend schools with more students of color (Morris, 2005). Also contradicting the expected effects of racial/ethnic composition, girls of color are less likely to be referred when they attend schools with more white students. This effect may be explained by the disparate findings in the literature on teachers' perceptions of girls of color. While ethnographic

research has documented that black girls in schools with diverse student bodies are perceived as compliant helpers and rule enforcers (Ferguson, 2001; L. Grant, 1984), other research, based in a majority-minority school, finds that black girls who defy expectations of docile femininity are targeted for behavioral intervention (Morris, 2007)..

Identifying giftedness. While the vignettes meant to be perceived as giftedness revealed no racial/ethnic differences or variation by racial/ethnic composition in referrals to gifted/talented testing, the confounding of giftedness and disability may vary by race/ethnicity, gender, and racial/ethnic composition. In particular, teachers were less likely to perceive black boys as being potentially gifted/talented when they show indicators of disability relative to white students when they work in schools with more white students. Teachers in schools with more white students may be more likely to refer black boys to special education when they show indicators of giftedness, relative to white students. These effects were not significantly different, and should be treated cautiously. However, these large effects with p-values between 0.05 and 0.10 tell a similar story across multiple analyses about how teachers perceive the possibility of giftedness for children of color. The patterns suggest that teachers conflate whiteness with giftedness, while higher abilities among students of color are made invisible (Staiger, 2004), and that this conflation is exacerbated in schools with higher proportions of white students.

CONCLUSION

This research provides most consistent support for the hypothesis that frog-pond effects, driven by racial/ethnic bias, affect how teachers perceive the nature of student challenges and strengths, and whether they perceive potential exceptionality. However, the results speak most clearly to existing research on perceptions of black boys (Ferguson, 2001; López, 2003). The divergent effects for boys and girls of color suggests that high-minority schools may buffer boys

of color from negative effects of stereotyping, but they may harm girls of color. The existing theories of racial/ethnic composition effects do not speak to the mechanisms of this harm to girls, highlighting the need for further more research on institutional responses to girls of color (Chesney-Lind, 1989; Morris, 2007).

The findings here have limitations that necessitate caution in interpreting findings. As is discussed in the limitations of the research presented in Chapter 3, the experimental survey simplifies the real-world process of teacher decisions to refer, and may over- or under-estimate the effects of racial/ethnic bias in human interactions.

Additionally, while the experimental design allows for a high degree of internal validity, it is possible that the results here do not generalize beyond the sample. . Racial/ethnic disparities in special and gifted education vary across states, raising the concern that these patterns may only apply to the specific context of this project. However, given that the findings presented here for schools with higher proportions of children of color match my previous findings in a large east-coast city, it appears likely that the results are meaningful beyond the 275 teachers included in this study. Similar to Chapter 3, another concern of external validity is that the teachers are more experienced than most in the U.S., meaning they may have made quicker judgments based on their extensive experience, perhaps increasing racial/ethnic and gender bias through less cautious decisions, and they may have taken fewer courses on multicultural education, also perhaps increasing the effects of race/ethnicity and gender.

While the effects here provide some evidence in support of the racial-bias-driven frog-pond effects, further research is needed to explore the mechanisms more deeply, especially given the divergent findings by gender within racial/ethnic groups.

Table 1. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Rating of Referral to Exceptionality Testing: Mild Academic Challenges

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.090	0.527	0.865
Latino, non-immigrant family	0.947	0.583	0.104
Latino, immigrant family	0.535	0.625	0.392
Gender			
Male	0.897	0.558	0.108
Racial Composition			
Proportion white	1.738	1.283	0.175
Interactions			
Race/Ethnicity by Gender			
Black, male	-2.037	1.639	0.214
Latino, non-immigrant family, male	-4.342	1.924	0.024
Latino, immigrant family, male	-0.318	2.073	0.878
Race/Ethnicity by Composition			
Black, proportion white	-2.037	1.639	0.214
Latino, non-immigrant family, proportion white	-4.342	1.924	0.024
Latino, immigrant family, proportion white	-0.318	2.073	0.878
Gender by Composition			
Male, proportion white	-1.484	1.802	0.410
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	2.836	2.242	0.206
Latino, non-immigrant family, male, proportion white	5.095	2.727	0.062
Latino, immigrant family, male, proportion white	1.117	2.719	0.681

Table 2. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Ranking of Referral to Exceptionality Testing: Mild Academic Challenges

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.560	0.578	0.333
Latino, non-immigrant family	-0.143	0.615	0.817
Latino, immigrant family	0.083	0.616	0.892
Gender			
Male	0.414	0.558	0.457
Racial Composition			
Proportion white	-0.579	1.299	0.656
Interactions			
Race/Ethnicity by Gender			
Black, male	-0.545	0.785	0.487
Latino, non-immigrant family, male	-0.245	0.841	0.771
Latino, immigrant family, male	-0.193	0.844	0.820
Race/Ethnicity by Composition			
Black, proportion white	2.954	1.739	0.089
Latino, non-immigrant family, proportion white	-2.380	1.969	0.227
Latino, immigrant family, proportion white	0.812	1.924	0.673
Gender by Composition			
Male, proportion white	2.225	1.732	0.199
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	-5.768	2.372	0.015
Latino, non-immigrant family, male, proportion white	1.380	2.716	0.612
Latino, immigrant family, male, proportion white	-2.232	2.612	0.393

Table 3. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Rating of Referral to Exceptionality Testing: Moderate Behavioral Challenges and Low-average Academic Skills

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.987	0.585	0.092
Latino, non-immigrant family	0.110	0.617	0.858
Latino, immigrant family	1.337	0.627	0.033
Gender			
Male	0.495	0.608	0.416
Racial Composition			
Proportion white	3.433	1.550	0.027
Interactions			
Race/Ethnicity by Gender			
Black, male	0.044	0.840	0.958
Latino, non-immigrant family, male	0.606	0.877	0.489
Latino, immigrant family, male	-1.454	0.881	0.099
Race/Ethnicity by Composition			
Black, proportion white	-4.287	1.890	0.023
Latino, non-immigrant family, proportion white	-1.428	2.064	0.489
Latino, immigrant family, proportion white	-2.644	2.057	0.199
Gender by Composition			
Male, proportion white	-5.059	1.868	0.007
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	5.211	2.585	0.044
Latino, non-immigrant family, male, proportion white	2.351	2.745	0.392
Latino, immigrant family, male, proportion white	4.446	2.769	0.108

Table 4. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Ranking of Referral to Exceptionality Testing: Moderate Behavioral Challenges and Low-average Academic Skills

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.710	0.658	0.273
Latino, non-immigrant family	-0.596	0.682	0.382
Latino, immigrant family	-0.331	0.665	0.618
Gender			
Male	-1.141	0.726	0.116
Racial Composition			
Proportion white	3.774	1.887	0.046
Interactions			
Race/Ethnicity by Gender			
Black, male	1.572	0.907	0.083
Latino, non-immigrant family, male	1.408	0.952	0.139
Latino, immigrant family, male	0.463	2.312	0.625
Race/Ethnicity by Composition			
Black, proportion white	-4.439	2.176	0.041
Latino, non-immigrant family, proportion white	-4.360	2.308	0.059
Latino, immigrant family, proportion white	-5.371	2.339	0.022
Gender by Composition			
Male, proportion white	-1.161	2.348	0.621
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	0.163	2.881	0.955
Latino, non-immigrant family, male, proportion white	3.937	3.071	0.200
Latino, immigrant family, male, proportion white	3.102	3.152	0.325

Table 5. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Rating of Referral to Gifted: Mild Behavioral Challenges with Above Average Academic Skills

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.540	0.849	0.525
Latino, non-immigrant family	1.293	0.813	0.111
Latino, immigrant family	0.677	0.820	0.409
Gender			
Male	1.075	0.804	0.181
Racial Composition			
Proportion white	-0.089	2.132	0.967
Interactions			
Race/Ethnicity by Gender			
Black, male	-0.582	1.176	0.621
Latino, non-immigrant family, male	-2.938	1.184	0.013
Latino, immigrant family, male	-2.206	1.126	0.050
Race/Ethnicity by Composition			
Black, proportion white	-1.390	2.602	0.593
Latino, non-immigrant family, proportion white	1.317	2.582	0.610
Latino, immigrant family, proportion white	0.627	2.586	0.808
Gender by Composition			
Male, proportion white	-0.782	2.754	0.777
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	4.217	3.833	0.271
Latino, non-immigrant family, male, proportion white	-0.304	3.657	0.934
Latino, immigrant family, male, proportion white	0.114	3.475	0.974

Table 6. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Rating of Referral to Gifted: Moderate Behavioral Challenges with Low-Average Academic Skills

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.888	0.771	0.249
Latino, non-immigrant family	1.038	0.788	0.188
Latino, immigrant family	0.954	0.786	0.225
Gender			
Male	0.036	0.858	0.966
Racial Composition			
Proportion white	2.799	2.318	0.227
Interactions			
Race/Ethnicity by Gender			
Black, male	-0.561	1.054	0.594
Latino, non-immigrant family, male	-0.089	1.035	0.931
Latino, immigrant family, male	-0.733	1.063	0.491
Race/Ethnicity by Composition			
Black, proportion white	-2.929	2.544	0.250
Latino, non-immigrant family, proportion white	-2.739	2.636	0.299
Latino, immigrant family, proportion white	-4.123	2.655	0.121
Gender by Composition			
Male, proportion white	-0.816	2.768	0.768
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	0.501	3.321	0.880
Latino, non-immigrant family, male, proportion white	1.010	3.307	0.760
Latino, immigrant family, male, proportion white	4.136	3.547	0.244

Table 7. The Effects of Perceived Race/Ethnicity, Gender, and Nativity on Teachers' Rating of Referral to Gifted: Mild Academic Challenges

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	-0.038	0.603	0.950
Latino, non-immigrant family	0.292	0.602	0.628
Latino, immigrant family	-0.253	0.706	0.720
Gender			
Male	-0.465	0.751	0.536
Racial Composition			
Proportion white	0.399	1.339	0.766
Interactions			
Race/Ethnicity by Gender			
Black, male	0.641	0.964	0.506
Latino, non-immigrant family, male	0.509	0.984	0.605
Latino, immigrant family, male	1.120	1.046	0.284
Race/Ethnicity by Composition			
Black, proportion white	0.955	1.874	0.610
Latino, non-immigrant family, proportion white	-1.501	1.949	0.441
Latino, immigrant family, proportion white	-2.228	2.104	0.290
Gender by Composition			
Male, proportion white	4.177	2.561	0.103
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	-5.112	3.062	0.095
Latino, non-immigrant family, male, proportion white	-1.813	3.327	0.586
Latino, immigrant family, male, proportion white	-0.977	3.406	0.774

Table 8. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Rating of Referral to Disability Testing: Mild Behavioral Challenges with Above Average Academic Skills

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.336	0.651	0.606
Latino, non-immigrant family	-0.036	0.665	0.956
Latino, immigrant family	0.521	0.664	0.432
Gender			
Male	0.093	0.650	0.887
Racial Composition			
Proportion white	-2.468	1.547	0.111
Interactions			
Race/Ethnicity by Gender			
Black, male	0.766	1.013	0.450
Latino, non-immigrant family, male	-1.040	0.924	0.260
Latino, immigrant family, male	-0.370	0.899	0.681
Race/Ethnicity by Composition			
Black, proportion white	3.533	1.951	0.070
Latino, non-immigrant family, proportion white	2.084	2.018	0.302
Latino, immigrant family, proportion white	3.616	1.983	0.068
Gender by Composition			
Male, proportion white	0.259	2.344	0.912
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	3.242	3.071	0.291
Latino, non-immigrant family, male, proportion white	3.462	3.025	0.252
Latino, immigrant family, male, proportion white	-1.927	2.935	0.511

Table 9. The Effects of Perceived Race/Ethnicity, Gender, Nativity, and Racial Composition on Teachers' Ranking of Referral to Disability Testing: Mild Behavioral Challenges with Above Average Academic Skills

	Coef.	Standard Error	*p-value*
Main Effects			
Race/Ethnicity (white comparison)			
Black	0.485	0.617	0.432
Latino, non-immigrant family	0.043	0.638	0.946
Latino, immigrant family	0.133	0.605	0.825
Gender			
Male	-0.134	0.646	0.836
Racial Composition			
Proportion white	0.521	1.564	0.739
Interactions			
Race/Ethnicity by Gender			
Black, male	0.620	0.894	0.480
Latino, non-immigrant family, male	0.680	0.904	0.940
Latino, immigrant family, male	-0.368	0.859	0.668
Race/Ethnicity by Composition			
Black, proportion white	-0.250	1.961	0.899
Latino, non-immigrant family, proportion white	-1.567	2.029	0.440
Latino, immigrant family, proportion white	0.216	1.960	0.912
Gender by Composition			
Male, proportion white	-2.554	2.222	0.250
Race/Ethnicity by Gender by Composition			
Black, male, proportion white	4.831	2.868	0.092
Latino, non-immigrant family, male, proportion white	3.886	2.969	0.191
Latino, immigrant family, male, proportion white	1.653	2.765	0.550

Chapter 6

Conclusion

Conclusion

In this dissertation, I have aimed to contribute to scholarly and practical understanding of the nature of racial disproportionality in special and gifted education. I argue that exceptionalities are socially constructed, and that different categories of exceptionality have different meanings. Identifying a student as being "different enough" from the norm, or from what is expected of her, is a categorization process that varies depending on the race/ethnicity, nativity, and gender of the student, the types of behavioral or academic differences, and the social context. I explored this variation through three empirical studies.

In Chapter 3, I addressed the polarization in the literature on racial/ethnic disproportionality in special education around the question of whether special education is provided in racially/ethnically biased ways. My experimental design provided causal evidence in race/ethnicity, nativity, and gender effects in how teachers respond to children indicating academic and behavioral differences in the classroom. Specifically, I found that boys of color were more likely to be suspected of exceptionality when they exhibit behavioral challenges. I argue that the category of emotional disorder, in particular, may maintain or exacerbate racial/ethnic inequalities in education. Boys of color may be seen as fulfilling racialized and gendered stereotypes of aggression, and therefore segregated to classrooms where they experience stigma, lower expectation, and potential negative peer effects.

In Chapter 4, I use a dataset of Wisconsin public school students to test whether and how school racial/ethnic composition moderates the relationship between individual-race/ethnicity and placement in special education across the more subjective categories of disability. The individual-level factors in the analyses support my conceptualization of disability statuses as

more-advantaged and less-advantaged, driving my interpretation of the full set of predictors in terms of differential statuses. My results indicate that for white students, attending schools with more peers of color increases their placement in more-advantaged disabilities. For students of color, attending schools with more same-race peers decreases their placement in special education. These findings add nuance to the polarized debate over racial/ethnic bias versus confounders, and expand the notion of school context from a mere confounder to a moderator of race/ethnicity effects. I posit that the moderation effects may be explained by frog-pond effects driven by racial/ethnic bias, they may be explained by racial/ethnic competition, or perhaps by both of these mechanisms.

In Chapter 5, I ask whether and how the racial/ethnic context of the school shapes the racialized and gendered suspicions of disability and giftedness by elementary school teachers. Using school-level racial composition data and an experimental survey design, I examine whether a student's race/ethnicity, nativity, and gender affect teacher decisions to refer for exceptionality testing differently in schools with different racial/ethnic compositions. I find that in schools with more white students, teachers are less likely to perceive academic challenges as disability when evaluating a boy of color. Further, while white boys experience decreased likelihood of referral for behavior problems in schools with more white students, boys of color experience no such decrease. Conversely, when they work in schools with more white students, teachers are more likely to refer girls of color when they have academic challenges, and less likely to refer them when they have behavioral challenges. I argue that these findings suggest some support for contextual effects explained by racial-bias-driven frog-pond effects. The divergent findings by gender and race/ethnicity suggest that boys and girls of color experience very different biases by teachers.

Is Special Education Racist?

The recent headlines from this area of research have called into question whether racial/ethnic disproportionality in special education – without any discussion of gifted education – reveals racism in the schools. Federal policy, and the resulting local laws, treat the disproportionality in the raw numbers as a potential case of racial/ethnic bias. Morgan and colleagues (2015) argue that this is misguided, and that more students of color should be identified as having disabilities. Both of these perspectives are oversimplifications of a complex issue. I argue here that suspicion of each category of exceptionality arises from a different set of assumptions, biases, and expectations for students, and that the labels have very different implications for students. Over- or under-representation of students of color in special education does not have a clear meaning in regard to structural racial inequalities. The more complicated story is that race/ethnicity effects depend on which students, in which contexts, and showing which types of educational needs.

The Racialized and Gendered Construction of Exceptionality

The three empirical chapters presented here support my rejection of exceptionality as purely neurophysiological difference. Rather, exceptionality arises in racialized and gendered ways that vary by context. In the main effects of the experiment, I show that behavioral challenges are recognized as problematic enough to receive a medicalized label of disability when boys of color demonstrate them. In the observational data analysis, my findings suggest that exceptionalities become more and less racialized depending on the context – these labels, meant to provide support, may function as tools of within-school segregation. Finally, the test of school context's moderation of the experimental findings suggests that the school racial/ethnic

context drives teachers' perceptions of exceptionality, with unique effects for boys and girls of different racial/ethnic backgrounds.

Implications for Racial/Ethnic Inequality

The bigger question at the heart of the debate over whether special and gifted education, one that is often ignored, is that we do not know what the effects of these services are for students. While students in special education have lower outcomes than their peers without exceptionalities (Wagner, et al. 2006), scholars remain unclear about whether these lower outcomes are attributable to selection differences or due to negative outcomes of special education services. Because students with exceptionalities are different from students without, likely in many unmeasured factors, this question plagues research on the effectiveness of special education. Researchers investigating the effects of special education vary in the direction of the effects of these services (Hanushek et al., 2002; Morgan et al., 2010; Shifrer et al., 2013). Therefore, it is difficult to interpret whether higher and lower referral rates by race/ethnicity are positive or negative for student outcomes.

It is possible that the effects of special education and gifted services vary depending on the exceptionality label, with certain exceptionalities improving outcomes, and other exceptionalities negatively impacting outcomes. Emotional/behavioral disorder, in particular, suggests that a student has a chronic medicalized disorder of behavior problems; this exceptionality is more likely to be identified among students of color, who are then more likely to be excluded from the general education classroom (US Department of Education, 2010a)

Directions for Future Research

The gender-race/ethnicity intersection is one of the most puzzling findings in this dissertation, and this is an area where research is severely lacking. Future research should

examine the emergence of the perception of disability by gender, race/ethnicity, and school context, using qualitative methods to identify possible mechanisms.

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