

RACIAL DIFFERENCES IN PARENTAL REPORTS OF SPECIFIC LEARNING  
DISABILITY AND ADD/ADHD

A Thesis  
submitted to the Faculty of the  
Graduate School of Arts and Sciences  
of Georgetown University  
in partial fulfillment of the requirements for the  
degree of  
Master of Public Policy  
in Public Policy

By

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Washington, D.C.  
April 19, 2021

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# RACIAL DIFFERENCES IN PARENTAL REPORTS OF SPECIFIC LEARNING DISABILITY AND ADD/ADHD

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## ABSTRACT

This thesis analyzes the role of race in the likelihood of students in K-12 receiving a specific learning disability classification, conditional on a sample of students already having an ADD/ADHD disability classification. Using data from Parent and Family Involvement surveys as a part of the 2016 National Household Education Survey, this thesis seeks to examine whether among students with ADD/ADHD classifications, non-White students are more likely than White students to have a specific learning disability classification, as opposed to only one, conditional on having any. The findings indicate that no significant racial disparity is present in the learning disability classification, both overall and among students who already have an ADD/ADHD classification, when controlling for family and socioeconomic demographics.

This thesis is dedicated to my students at CICS Wrightwood, who motivate me in everything that

I do. Many thanks as well to my entire support system.

My gratitude goes out to you all,

Vasilisa F. Smith

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## INTRODUCTION

The Individuals with Disabilities Education Act (IDEA) of 1975 legally codified the rights of students with disabilities in education settings. Since its passage, however, special education has resulted in troubling outcomes for students. According to the National Center for Education Statistics only 73% of students served under IDEA receive a regular high school diploma,<sup>1</sup> as compared to 85% of their nondisabled peers.<sup>2</sup> Among those receiving a regular high school diploma there are disparities by race and by disability, with Black students seeing the lowest average graduation rates of 66% and students with multiple disabilities graduating on average at a rate of only 47%.<sup>3</sup> Aside from low graduation rates there is an increased probability of students with disabilities interacting with the juvenile justice system, often resulting in criminal records (Bacher-Hicks et al., 2019). Students with disabilities experience high rates of bullying, which can lead to increased aggression toward other students in the classroom. Students with disabilities also see higher rates of novice teachers (Losen et al., 2014) who are underprepared for meaningfully advancing their academic progress.<sup>4</sup> All of these factors could influence the disparate graduation rates previously mentioned.

One troubling aspect of special education is the number of non-White students referred for services. According to the National Center for Education Statistics, as of the 2015-2016 school year 17% of all students with disabilities were American Indian/Alaska Native, 16% were Black, 12% were Hispanic and 7% were Asian, as compared with 14% White.<sup>5</sup> With the

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<sup>1</sup> “Indicator 9: Students With Disabilities.”

<sup>2</sup> “The Condition of Education - Preprimary, Elementary, and Secondary Education - High School Completion - Public High School Graduation Rates - Indicator May (2020).”

<sup>3</sup> “Indicator 9: Students With Disabilities.”

<sup>4</sup> Losen et al., “Disturbing Inequities.”

<sup>5</sup> “Indicator 9: Students With Disabilities.”

aforementioned rapidly diversifying population, growth in non-White students requiring special education services should not be surprising. While IDEA acknowledges the “rapidly changing profile”<sup>6</sup> of our country, including growing rates of students from non-English backgrounds, the acknowledgement itself does not remedy the disproportionate representation of minority populations in special education. Despite these statistics, however, it is unclear at what rates students of color should be referred for special education. According to a 2017 study examining the disproportionate referral rates, there is an indication that students of color are actually referred for special education services at lower rates than their White peers (Morgan et al., 2015). The referral of students of color at disproportionate rates is concerning, whether at rates too high or too low, and has profound implications for the way they experience life in school and beyond.

Students of color make up a disproportionate amount of low-income and poor<sup>7</sup> students due to factors such as household education levels, family structure, foreign-born heads of household, and lack of employment opportunities in high-poverty areas. The lasting effects of racial redlining in the Jim Crow era play an important role in the lack of access many families of color have to preventative healthcare services and safe environments. This results in disadvantages in the school system, especially pertaining to disability status. Due to the aforementioned lack of access, students in high-poverty neighborhoods may be referred for special education services later than students with reliable access to high-quality healthcare coverage and providers. Receiving a later referral means receiving supports later in a student’s school career. The dangers of receiving supports later include a likelihood that a student will struggle academically, which could be reflected in student achievement and self-confidence

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<sup>6</sup> “[USC02] 20 USC CHAPTER 33, SUBCHAPTER I: GENERAL PROVISIONS.”

<sup>7</sup> According to the U.S. Census Bureau, poverty is defined as family income less than 100 percent of the federal poverty threshold and low income is defined as family income less than 200 percent of the poverty threshold.

levels. Moreover, a prolonged undetected disability could result in an unfavorable disciplinary record for a student struggling with controlling behavior as a manifestation of their disability.

The residual effects of these negative implications can far outlast a student’s time in school.

It is important to note that students with disabilities often receive disparate treatment in schools making the case for equitable representation of racially diverse students in special education even stronger. Receiving a diagnosis of multiple disabilities can have many effects on a child’s school experience. Depending on the manifestations of these disabilities and their severity, children may need more out-of-class support and are likely to be at risk for feeling isolated from their peers and “othered.” This can have crippling effects on self-esteem, attitudes toward school, social-emotional wellbeing and even academic achievement.

Additionally, students with severe disabilities are likely to need highly individualized attention outside of the general education classroom, though such disabilities are determined to be low incidence<sup>8</sup> and rarely occurring. There are a number of high-incidence disabilities, such as emotional disturbances, autism, or mild intellectual disabilities, that may also require individualized attention. There are also a number of high-incidence disabilities with a high likelihood of having a comorbidity, meaning the simultaneous presence of two or more conditions. Two such common disabilities are ADD/ADHD and specific learning disabilities. Some of the conditions with high rates of comorbidity are the very same conditions with the highest racial disparities present in their referrals, suggesting that non-White students may be referred for more than one disability at rates higher than White students.<sup>9</sup> While there is little

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<sup>8</sup> (A) a visual or hearing impairment, or simultaneous visual and hearing impairments;  
(B) a significant cognitive impairment; or  
(C) any impairment for which a small number of personnel with highly specialized skills and knowledge are needed in order for children with that impairment to receive early intervention services or a free appropriate public education. (Individuals with Disabilities Education Act, 20 U.S.C. 1400, et seq. )

<sup>9</sup> “FACT SHEET: Equity in IDEA | U.S. Department of Education.”

research to determine true rates of incidence of multiple disabilities by race, classification rates show disparities along racial lines. Students with multiple disabilities may spend more time outside of the general education classroom and may potentially receive a lower quality education than that of their nondisabled peers, which is why this thesis will focus on testing the effects of race on this group.

## BACKGROUND

Who becomes identified as having a disability and needing special education services can depend on many things, including teacher bias, parent consent and willingness to take up special education services, school behavior codes, and a school's level of academic rigor, among other things. Disability referral and classification can determine how much time a child spends with their nondisabled peers, what kind of quality education a child will receive, and ultimately their ability to move up through grades. It is imperative that we look at levels of racial equity in special education to better understand if students are being referred for special education services out of true likelihood of having a disability and needing additional support, or if they are being referred for other reasons.

I will be looking specifically at two high-incidence disabilities: specific learning disabilities (which can encapsulate everything from dyslexia to specific reading comprehension deficits) and ADD/ADHD (which can manifest in many different ways, but often manifests as difficulty to focus and pay attention, which can also translate into difficulties controlling behavior). I chose these two disabilities because they are high-incidence, meaning they occur fairly often (33% of students served under IDEA are classified as having a specific learning

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disability, while 15% are classified as having other health impairment—the classification that covers ADD/ADHD),<sup>10</sup> so as to not limit my sample size. The dataset I am using in this thesis is the 2016 Parent and Family Involvement in Education Survey. The survey collected information about parent involvement in education, help with homework, and parent involvement at school, as well as detailed questions about the children in the home. Many questions in the survey looked at child characteristics like behaviors in the classroom, levels of difficulty completing schoolwork, positive and negative feedback from teachers, and children’s medical needs. The data from these categories may reveal underlying disability among survey respondents, which will be critically important in trying to determine whether or not race plays a significant role in disability classification.

## LITERATURE REVIEW

In 2005 researchers Pastor and Reuben<sup>11</sup> examined racial and ethnic disparities in behavioral and learning disorders in children by analyzing the differences in students identified with ADHD and learning disabilities, separately. The study used nationally representative data from 1997-2001 National Health Interview Surveys and a sample of 21,294 students ages 6-11. After adjusting for confounding variables there was no significant difference in the learning disability diagnosis rates for White and non-White students, but that Hispanic and African American students were less likely than White students to receive an ADHD diagnosis. The researchers controlled for sociodemographic factors like family income and health insurance coverage, noting that these controls might yield varying results across different disability

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<sup>10</sup> “The Condition of Education - Preprimary, Elementary, and Secondary Education - Elementary and Secondary Enrollment - Racial/Ethnic Enrollment in Public Schools - Indicator May (2020).”

<sup>11</sup> Pastor PN, Reuben CA. Racial and ethnic differences in ADHD and LD in young school-age children: Parental reports in the National Health Interview Survey. *Public Health Reports*. 2005;120:383–392.

categories. Since Pastor and Reuben’s study was published, students with disabilities have grown to represent approximately 14% of K-12 public school enrollment<sup>12</sup> and students of color have grown to represent 53% of K-12 public school enrollment.<sup>13</sup> The analysis in this thesis will focus on a more recent dataset from 2016 and look at an age range that captures the trends from pre-kindergarten (ages 3-5) all the way through high school, which is excluded in this study.

The disparities that exist within special education have been studied extensively since the passage of IDEA in 1975.<sup>14</sup> Researchers have looked into possible causes for racial over-representation in certain disability categories and racial under-representation in others with the help of disaggregated data provided by the U.S. Department of Education.<sup>15</sup> Special education data have shown higher proportions of non-White students receiving services than White students and the U.S. Department of Education has even put forth specific guidelines in IDEA for states to reduce this disproportionality. Multiple findings suggest that racial disparities in special education are apparent in the following domains:<sup>16</sup> the referral and diagnosis process, access to financial and healthcare resources, and the educational experiences of students depending on severity of the disability. This literature review will address each of these in turn.

This thesis will test to see if there is a statistically significant effect of a student’s race on their likelihood of receiving a diagnosis of both learning disability and attention deficit disorder, which first requires looking at the process of identifying a student with a singular disability.

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<sup>12</sup> U.S. Department of Education, National Center for Education Statistics. (2019). Digest of Education Statistics, 2018 (NCES 2020-009), Chapter 2.

<sup>13</sup> Original calculation based on the following source: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), “State Nonfiscal Survey of Public Elementary and Secondary Education,” 2000–01 and 2017–18; and National Elementary and Secondary Enrollment by Race/Ethnicity Projection Model, 1972 through 2029. See Digest of Education Statistics 2019, table 203.50.

<sup>14</sup> “FACT SHEET: Equity in IDEA | U.S. Department of Education.”

<sup>15</sup> “Indicator 9: Students With Disabilities.”

<sup>16</sup> There are likely many other factors that influence the representation of race in special education, which will be touched upon in the conceptual framework of this thesis.

Students are diagnosed and classified by school psychologists who use several varied tools like psychological assessments, cognitive assessments, analysis of emotional and behavioral concerns, and analysis of a child's adaptive functioning. Research has shown that there are disparities in the referral and diagnosis process of students with disabilities, with students of certain races being diagnosed for high rates of some disabilities and low rates of others. One such study looked into the delay of diagnosing African American students with autism, finding that among their sample of 544 students the average age of receiving an autism diagnosis was about five years (Constantino, Abbacchi, Saulnier, Klaiman, Mandell, Zhang, Hawks, Bates, Shattuck, Molholm, Fitzgerald, Roux, Lowe and Geschwind, 2020).<sup>17</sup> This means that on average, African American students who display signs of autism wait five years after concerns begin before getting an autism diagnosis and receiving supports for their disability. The limitations of this study leave questions about diagnosis time lags among other races (Constantino et al., 2020). The Constantino study also found that students with both autism and an intellectual disability got support services in less time, indicating that African American students may receive services for other disabilities more quickly than for autism.

Whether a child has access to high-quality health insurance, a parent who is knowledgeable about the Medicaid enrollment process, a school that is well-staffed and a community in which outside services are readily available can have a large effect on the rate a child is diagnosed and how quickly they receive support. Access to resources varies along lines of race and socioeconomic status, geographic location, immigration status and English language proficiency, to name a few. Researchers Morgan, Farkas, Hillemeier, Mattison, Maczuga, Li & Cook note that families of color are likely to have fewer interactions with pediatricians and other

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<sup>17</sup> Constantino et al., "Timing of the Diagnosis of Autism in African American Children."

healthcare professionals during early childhood (2015).<sup>18</sup> Children of color often receive health-related diagnoses from education professionals instead, despite representing a smaller portion of three-to-five-year-olds enrolled in pre-K programs than their White counterparts.<sup>19</sup>

Whereas conventional wisdom in special education often includes servicing students in a separate classroom, there is a push for inclusion of students with disabilities in the general education setting. The push has been spearheaded by special education advocates<sup>20</sup> as well as the United States Department of Education.<sup>21</sup> Rogers and Johnson in 2018 noted that a two-year longitudinal study found that students with multiple disabilities scored higher on achievement tests after receiving instruction in general education classrooms, rather than separate classrooms (Fisher & Meyer, 2002). The authors questioned whether or not students with severe or multiple disabilities are being supported in general education classrooms with the movement toward inclusion practices in special education. They analyze multiple strategies to include students with comorbidities in general education classrooms: multi-level instruction, cooperative learning, activity-based learning, mastery learning, technology, and peer support. Using these strategies, they note that it is possible to provide students with multiple disabilities with a rigorous education under IDEA law, despite current grim outcomes.

The literature on the topic of identifying students for disabilities draws from the process of identifying students with a singular disability. There are many papers that discuss common disabilities that go hand in hand, and how the manifestations of these multiple disabilities appear

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<sup>18</sup> Morgan et al., “Minorities Are Disproportionately Underrepresented in Special Education.”

<sup>19</sup> “The Condition of Education - Preprimary, Elementary, and Secondary Education - Preprimary Education - Preschool and Kindergarten Enrollment - Indicator April (2020).”

<sup>20</sup> Hehir and Pascucci, “Instituto Alana Rua. Fradique Coutinho, 50, 11o. Andar, Pinheiros São Paulo / SP Alana.Org.Br/En/.”

<sup>21</sup> “FACT SHEET: Equity in IDEA | U.S. Department of Education.”

in different communities, but nothing specifically noting a correlation between race and likelihood of receiving a multiple disability diagnosis.

## CONCEPTUAL FRAMEWORK

I will test whether non-White students are more likely than White students to receive a specific learning disability classification, conditional upon an ADD/ADHD classification. Some of the disabilities that are likely to have a comorbidity include: emotional disturbance, autism spectrum disorder, ADD/ADHD and learning disabilities.<sup>22</sup> If race plays a statistically significant role in the classification of one of the disabilities that has a high likelihood of having a comorbidity, it may indicate that race plays a significant role in the classification of having more than one disability classification. Looking at the likelihood of having a specific learning disability classification conditional on nothing, and comparing that to the likelihood of having a specific learning disability classification conditional on having ADD/ADHD may reveal a change in the race gap that pertains to the way students are classified for these two high-incidence disabilities. Given the prior literature I hypothesize that a racial gap may be present in the classification of students for these disabilities, based primarily on the fact that these two high incidence disabilities manifest in academic and behavioral difficulties that education or health care professionals may perceive differently across racial lines. This thesis will not be able to test whether attitudes, biases or limiting beliefs exist among education or healthcare professionals that may result in different classification outcomes across race, but it will test variables relating to household demographics and school contact with parents—which may indicate differences across racial groups.

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<sup>22</sup> Disability classifications as defined under IDEA law as defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)

Factors that can influence the likelihood of a child receiving special education in school (whether a child receives an IEP or not) include child race, child gender, family socioeconomic status, language spoken at home, and problems with academics or behavior. Factors that may further impact that likelihood of a childhood receiving a disability classification include access to mental health care and mental health insurance, which are not captured in the scope of this thesis' analysis.

## DATA AND METHODS

My empirical analysis uses survey data from the National Household Education Survey 2016 Parent Involvement Survey.<sup>23</sup> The dataset contains individual responses from families in all 50 states and the District of Columbia. The survey was conducted as an address-based survey by the Census Bureau from January-August 2016, and it was designed to understand various aspects of child health in the United States.

Parents or guardians were respondents of the survey, and the sample contained students in K-12 who were enrolled in school or homeschooled. Participants were asked questions pertaining to children aged 3-20 in their homes. Total respondent sample size is 14,075. The population I plan to analyze is children who have a disability as reported by their parents, and children who receive special education services through an IEP.

The survey looks at national data but does not give state or local data, meaning that we cannot control for variables at that level, though having these data would be important for this analysis. In the future, research broken down by state, district and school would allow us to see more clearly the role that local school funding levels and other state and local policies (local

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<sup>23</sup> "A Survey About Students' and Families' Experience with Their Schools: Part of the 2016 National Household Education Survey."

discipline policies or suspension rates, for example) play in the identification of students with disabilities.

For the purpose of this thesis I will use a multiple linear regression model to analyze the data. This model will clearly show whether there is a statistically significant effect of race on the likelihood that a child receives a disability classification of specific learning disability, conditional upon an ADD diagnosis. I estimate the following model, with child race being my key independent variable of interest and specific learning disability being my dependent variable of interest:

$$Y_i = \beta_0 + \beta_1i + \beta_2i + \beta_3i + \beta_4i + \beta_5i + \beta_6i + \beta_7i + \beta_8i + \beta_9i + \beta_{10}i + u \quad (1)$$

*Y<sub>i</sub> = specific learning disability, conditional upon ADD*

*β<sub>0</sub> = constant*

*β<sub>1</sub> = child race/ethnicity*

*β<sub>2</sub> = child condition (disability)*

*β<sub>3</sub> = IEP services*

*β<sub>4</sub> = household income*

*β<sub>5</sub> = language spoken in home*

*β<sub>6</sub> = problem behaviors*

*β<sub>7</sub> = difficulty completing schoolwork*

*u = error term*

## DESCRIPTIVE STATISTICS

Table 1 shows the descriptive statistics for my dependent, independent and control variables. In my regression I will analyze both the full sample population and just the ADD sample population. The number of students in the full sample is 14,075 and the number of

students in the ADD sample is 1,677. Student ages range from 3-20 in the full sample and 5-20 in the ADD sample, possibly due to delays in early childhood detection of disability manifestations.

**Table 1: Descriptive Statistics of Key Dependent, Independent and Control Variables**

	<b>White</b>	<b>Black</b>	<b>Hispanic</b>	<b>Asian/Pacific Islander, All Other Races, Multiple Races</b>
<b>Learning Disability</b>	7.27%	8.23%	6.23%	4.45%
<b>ADD/ADHD</b>	13.93%	13.56%	8.19%	7.70%
<b>Household Income</b>				
\$0-330,000	12.26%	40.40%	33.35%	16.54%
\$30,001-\$75,000	28.76%	34.05%	38.06%	28.18%
\$75,001-\$150,000+	58.98%	25.54%	28.69%	55.28%
<b>Language spoken at home besides English</b>	2.73%	4.26%	40.66%	20.94%
<b>School Contacted Home About Difficulty Completing Schoolwork 1+ Times</b>	21.45%	30.05%	21.58%	15.68%
<b>School Contacted Home About Difficult Behavior 1+ Times</b>	15.71%	32.86%	14.80%	13.68%
<b>N=</b>	7,980	1,386	2,956	1,753

**N (full sample) = 14,075 N (ADD sample) = 1,677**

Source: “A Survey About Students’ and Families’ Experience with Their Schools: Part of the 2016 National Household Education Survey.”

## REGRESSION RESULTS

**Table 2: Regression results on full sample controlling for race, income, language spoken at home and number of school calls home regarding a child's difficulty completing schoolwork**

	(1) Learning Disability Classification	(2) Learning Disability Classification	(3) Learning Disability Classification	(4) School Contacted Home About Difficulty With Schoolwork
<b>Child Race/Ethnicity</b>				
Black	.010 (.008)	-.004 (.008)	-.007 (.008)	.067*** (.014)
Hispanic	-.010* (.005)	-.006 (.006)	-.009 (.006)	.022** (.010)
Asian/Pacific Islander, All Other Races, Multiple Races	-.028*** (.006)	-.022*** (.006)	-.018*** (.006)	-.037*** (.010)
<b>Household Income</b>				
\$30,001-\$75,000		-.027*** (.007)	-.025*** (.007)	-.005 (.011)
\$75,001-\$150,000+		-.048*** (.007)	-.04*** (.007)	-.050*** (.010)
<b>Language spoken at home besides English</b>		-.042*** (.006)	-.03*** (.007)	-.087*** (.011)
<b>School Contacted Home About Difficulty With Schoolwork</b>			.095*** (.007)	
<b>Learning Disability Classification</b>				.258*** (.017)
<b>Constant</b>	.073*** (.003)	.110*** (.007)	.082*** (.007)	.230*** (.010)
Observations	14075	14075	13523	13523
R-squared	.002	.008	.032	.039

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

<sup>1</sup>Variable is dependent variable in the first three models, and independent variable in the fourth.

In order to understand the effects of race on likelihood of a learning disability diagnosis conditional upon ADD I ran two separate regressions, as shown in Table 1 above and Table 2 below. I included the following control variables in the first model: race, annualized household income, student's language spoken at home and number of times the school has contacted a parent about a student's difficulty completing schoolwork. The second model uses the same control variables, but the sample is limited to only students who have already received an ADD classification, either by a medical or education professional.

The first model (Table 2) shows that parent contact regarding difficulty completing schoolwork appears to be a strong predictor of a learning disability classification, with students receiving calls home two or more times in one school year seeing up to a 13% higher likelihood of receiving a learning disability classification than those who received fewer phone calls home. Learning disabilities manifest primarily in academic difficulties, ranging from dyslexia to other difficulties with reading, writing or mathematic processing. The correlation between difficulty completing schoolwork and learning disability classification here may indicate that among this sample, learning disabilities are being appropriately diagnosed. The model also shows an inverse relationship with household income and likelihood of receiving a learning disability classification, indicating that higher household incomes may see a lower likelihood of this disability classification. Household income and geographic location are both strong determinants of the quality of public school a given student is able to attend, and the inverse relationship with household income and learning disability classification could be a result of school quality and ability to service students in a general education setting. This survey uses national household data and is not disaggregated by geographic location, so it is not possible to tell precisely what kind of a role neighborhood and individual school access plays. This

limitation also affects my ability to better understand the role of language as a control, because geography and spoken language can often be linked. For example, a student speaking a language other than English in the home who has access to a high quality bilingual education may not be classified as having a learning disability, whereas the same student could be seen as struggling academically due purely to a language barrier if they do not have access to bilingual services or language supports. This model does not indicate that race is a significant factor in receiving a disability diagnosis, therefore, the conclusion here cannot be drawn that non-White students are receiving learning disability classifications at disparate rates as compared with White students.

In Table 3, I limited the sample even further to just those students who already had an ADD classification, yielding a sample size of 1,600. The strongest predictor of a learning disability classification in this model also appears to be the amount of times a parent is contacted in one school year regarding a student's difficulty completing schoolwork. There is no significant evidence of a racial gap in either model. This could indicate that students are being classified for learning disabilities at appropriate rates but having access to local-level data could reveal details about the racial makeup of individual neighborhoods and schools, which would yield a much clearer picture of the role race place in disability classification. Moving forward, looking at racial data at the school staff level would help provide a clearer picture of the role of race, as teacher implicit bias could influence which students they initially refer for special education services.

**Table 3: Regression results on ADD sample controlling for race, income, language spoken at home and number of school calls home regarding a child's difficulty completing schoolwork**

	(1) Learning Disability Classification	(2) Learning Disability Classification	(3) Learning Disability Classification	(4) School Contacted Home About Difficulty With Schoolwork
<b>Child Race/Ethnicity</b>				
Black	.055 (.037)	.035 (.038)	.041 (.038)	.020 (.041)
Hispanic	.019 (.032)	.015 (.035)	.012 (.035)	.021 (.039)
Asian/Pacific Islander, All Other Races, Multiple Races	-.011 (.040)	-.011 (.040)	-.013 (.041)	-.040 (.046)
<b>Household Income</b>				
\$30,001-\$75,000		-.045 (.030)	-.044 (.031)	.0170 (.034)
\$75,001-\$150,000+		-.066**	-.064**	-.024
<b>Language spoken at home besides English</b>				
		(.029) -.040	(.03) -.035	(.033) -.146**
<b>School Contacted Home About Difficulty Completing Schoolwork</b>				
		(.055)	(.055) .051**	(.060)
<b>Learning Disability Classification</b>				
			(.022)	.065** (.028)
<b>Constant</b>	.270*** (.013)	.318*** (.026)	.285*** (.029)	.484*** (.031)
Observations	1677	1677	1600	1600
R-squared	.002	.005	.009	.009

*Robust standard errors are in parentheses*

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

<sup>1</sup>Variable is dependent variable in the first three models, and independent variable in the fourth.

**Table 4: Regression Analyzing the Effects of Race On Students with IEP's and without IEP's**

	(1)	(2)	(3)	(4)	(5)	(6)
	Learning Disability	Learning Disability	Learning Disability With IEP	Learning Disability Without IEP	Learning Disability With IEP	Learning Disability Without IEP
	full sample	ADD sample	full sample	full sample	ADD sample	ADD sample
<b>IEP</b>	0.321*** (0.023)					
<b>Black</b>	0.035 (0.042)	0.054 (0.036)	0.006 (0.006)	-0.001 (0.002)	0.020 (0.032)	0.009 (0.017)
<b>Hispanic</b>	0.020 (0.040)	0.019 (0.032)	-0.007* (0.004)	-0.000 (0.002)	0.001 (0.028)	0.009 (0.015)
<b>Asian/Pacific Islander, All Other Races, Multiple Races</b>	-0.034 (0.045)	-0.010 (0.040)	-0.022*** (0.004)	-0.003 (0.002)	-0.036 (0.033)	0.007 (0.020)
<b>Constant</b>	0.420** (0.177)	0.270*** (0.013)	0.050*** (0.002)	0.011*** (0.001)	0.192*** (0.011)	0.044*** (0.006)
<b>Observations</b>	1,236	1,677	14,075	14,075	1,677	1,677
<b>R-squared</b>	0.141	0.002	0.001	0.000	0.001	0.000

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 shows a regression of race and receiving services through an IEP. As discussed previously throughout this paper, an IEP is used to provide special education services to students with disabilities in school. Having an IEP is a valid indicator of a student receiving a learning disability classification, but it may not be a valid indicator of true likelihood that students actually have a learning disability. This is something that the model cannot accurately capture, as it may be influenced by things like teacher bias and varying cultural customs that may

influence behavior. In this model looking at groups across IEP status, race still does not appear to be very significant. However, the models in Table 1 showed that calls home about difficult behavior did not have a very significant effect on a student receiving a learning disability classification, only calls home regarding difficulty completing schoolwork, so it may be true that the likelihood of a student actually having a learning disability is appropriately captured in the amount of students who have an IEP. In the model above, the only racial category that is statistically significant is the category of Asian/Pacific Islander, All Other Races and Multiple Races. This variable was aggregated to account for a small sample size across each category, so it is not very clear which specific racial group in this category may be receiving learning disability diagnoses at higher rates.

## DISCUSSION

Analyzing racial disparities in disability classifications is an ongoing task. Multiple studies have been carried out by the Department of Education, researchers and other relevant professionals to determine whether a race gap exists in the population of students receiving special education services. For instance, Black students are referred at higher rates for emotional disturbances, and at lower rates for Autism, as mentioned in the previous Constantino et al., 2020 study. My findings suggest that there is not a significant racial disparity in students receiving learning disability classifications, both overall and conditional upon an ADD/ADHD classification. Both samples in Table 1 and Table 2 saw similar rates of specific learning disability classifications among all racial groups, with the caveat that the Asian American Pacific Islander population is too small to be fully disaggregated by specific ethnicity, the Indigenous

population is too small to be meaningfully observed, and the Multiple Races sample is not broken down into specific categories as it would limit sample size even further.

Localized data would help to better understand whether a racial gap exists in the way students are classified for disabilities. Local data, such as individual school or neighborhood demographics, would be useful in order to gain a deeper understanding of how much the control variables household income and language play in the analysis. For example, students residing in a predominantly Spanish-speaking neighborhood may have access to better bilingual and language services in their schools, which could mitigate their difficulty completing schoolwork. Students residing in higher-income zip codes and lower-income zip codes are also going to have varying access to services that support their learning, like fully staffed schools. Understanding school staffing levels, teacher retention rates, and racial data on school staff members who handle the special education referral process would provide more clarity. Per-pupil spending would be extremely informative, as would access to local funding formulas that may have differential weighted funding formulas for students with disabilities. Having access to these data would provide an indicator for whether students' needs are being met or not. It would also be interesting to further delineate in the data between parents who were told by a medical professional versus and education professional that their child has a specific condition. Understanding if there is a racial disparity occurring primarily in school settings or in medical settings would be useful in tailoring solutions that solve the problem in the specific setting where it occurs. Looking at these answers separately might also have implications that change the results of the analysis.

The most analogous paper to mine (Constantino et al., 2020, analyzes the timing of diagnosis of Autism Spectrum Disorder on African American children. This study sought to

determine whether the diagnosis timing difference would be exacerbated among a population of children who already have an Intellectual Disability diagnosis. The researchers found a racial disparity, noting that it takes African American children significantly longer than White children to get an ASD diagnosis from a medical professional when concerns are reported on a similar timeline by parents. Unlike my research, this paper analyzed diagnoses timing in a medical setting, noting the role that varied access to medical care by race plays in the delay. Using a similar framework of analyzing lack of access across racial groups, further research into my question could seek to determine whether access to early childhood education services changes analysis results.

My research seems to echo the conclusion of the Morgan et al., 2016 study in one category: Hispanic students may be less likely than White students to receive a learning disability diagnosis. This distinction is not evident across the sample of students with an ADD/ADHD diagnosis already, but it confirms prior research that Hispanic students are an underrepresented minority in special education (Sullivan et al., 2013).

Awareness of racial bias and special education should seek to continue to inform the way the disability classification process occurs in schools, starting with the referral process. Ensuring racial equity in disability classifications will be an important way of making sure every student has the supports and opportunities that they need. It may be useful to consider how these practices vary in medical settings versus education settings, to understand whether there are best practices in testing and evaluation methods that can be used across both settings or if extra attention needs to be paid to racial disparities in either setting. To further inform the understanding of the issue, analyses and cross-comparisons should be done in school districts that have implemented specific measures or policies to ensure educational equity. Having

specific measures in place to address racial equity in education practices might play a role in how the special education referral process either produces or mitigates disparities in localized school settings. Doing a cross-comparison of schools with and without policies that put academic interventions in place for struggling students would be beneficial when looking at specific learning disability diagnoses, as many research-based interventions can provide support for all learners and potentially reduce a school's reliance on special education programs for boosting academic achievement among struggling learners. Continued research into the specifics of racial difference across special education classification should be carried out in order to understand how to best serve all students.

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