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**What student and school factors increase disadvantages in special needs students? An  
investigation of Student Learning Growth in Students with IEPs**

Julia Burdulis

Trinity College

Fall 2020 Education Senior Thesis

## **Abstract**

This study used public-use data from the National Center for Education Statistics's (NCES) Early Childhood Longitudinal Program, Kindergarten Class of 2011 (ECLS-K: 2011) to examine math and reading learning growth from 4<sup>th</sup> to 5<sup>th</sup> grade among student with and without Individualized Education Programs (IEPs). When comparing the non-IEP student sample to the IEP student sample, a disproportionate number of minority students and students of low socioeconomic status were observed in the IEP student group. Among non-IEP students, significantly decreased score growth was predicted in students who were Black, Hispanic, had less highly educated parents, were from a low income household, or attended a school with a high percentage of students eligible for free or reduced price lunches (FRPLs). Among IEP students, the only significant predictors of decreased score growth were being Black and attending a school with a high percentage of students eligible for FRPLs. Potential reasoning for few significant findings among IEP students may be the broadness of the IEP status variable, suggesting future researchers may learn more about student, parent, teacher, and school factors negatively impacting students in special education by more narrowly defining IEP students by type of disabilities, services used, or IEP goals which were unattainable in the public use data file for the ECLS-K.

## **Introduction**

The academic disadvantages faced by students with Individualized Education Programs (IEPs) has been a long-standing concern among educators, parents and policy-makers. Among non-IEP students, variances in academic achievement have been identified based upon factors such as gender, race, socioeconomic status of students, as well as factors relating to the quality of

teachers and schools. Academic achievement can be considered a measure of student test scores at a single time point, whereas growth is a measure of the change in a student's performance over time, using longitudinal data. Seeing as students with IEPs have poorer academic outcomes by nature of the qualities which require them to receive special education, and many students with IEPs fall into the student, teacher, and school categories associated with poorer academic achievement among non-IEP students, it is likely that when examining such student groups longitudinal academic outcomes, discrepancies may be uncovered. Therefore, the purpose of the present study is to examine differences in learning growth among IEP students, grouped by student, teacher, and school factors such as race, socioeconomic status, teacher experience, and proportions of free and reduced-price lunch qualified and special education students at the school attended.

The problem of student characteristics being associated with poorer academic achievement can be framed by statistics from the National Center for Education Statistics, reporting the percent of students achieving 4<sup>th</sup> grade National Assessment for Educational Progress (NAEP) Basic Reading Achievement level, which can be understood as grade level proficiency (U.S. Department of Education, 2019). On the 2019 NAEP, 77% and 81% of White and Asian students, respectively, achieved proficiency, while just 55% and 48% of Hispanic and Black students, respectively, achieved proficiency (U.S. Department of Education, 2019). Furthermore, among students qualifying for free or reduced price lunches (FRPL), based on a low household income relative to the number of occupants in the household, only 53% achieved proficiency, compared with 81% of students who were not FRPL qualified in 2019 (U.S. Department of Education, 2019). These same trends in achievement can be observed in NAEP data consistently in past testing years. These significant differences affirm that wide

achievement gaps exist between student groups, and thus informed the present study investigating if similar gaps may exist when looking at learning growth, and when specifically studying the disadvantaged population of students with IEPs.

The paper proceeds as follows. First I review the existing literature, then I describe the methods, and then I present the findings, and finally discuss the implications of the findings. This study was guided by two specific research questions:

1. What student characteristics can predict diminished learning growth in 5<sup>th</sup> grade students?
2. What teacher and school characteristics can predict diminished learning growth in 5<sup>th</sup> grade students?

It has been hypothesized based on prior literature that IEP students who are also minority students, students of low socioeconomic backgrounds, and students with parents who are less highly educated will demonstrate less learning growth compared with peers. It has also been hypothesized that IEP students with inexperienced teachers, and attending a school in which a high percentage of students are in special education, and a high percentage of students are FRPL eligible will demonstrate lower learning growth.

## **Literature Review**

### *Race-related student factors impacting achievement and IEP services*

A body of research found discrepancies in academic achievement between racial groups. Schulte and Stevens (2015) reported significantly lower achievement for Black, Hispanic, and Native American students compared with White students. This is a particularly strong finding, in that the study controlled for varying definitions of ‘students with disabilities’ by measuring

achievement gaps according to three different models, related to inclusion of measurements of students who had later entry to special education, students who exited special education, and students who stayed in special education all the way through their education (Schulte & Stevens, 2015). Across all models for measuring achievement of students with disabilities, the racial categories of Black, Hispanic, and Native American students had statistically significant achievement gaps, along with students who were female, free or reduced price lunch qualified, or had limited English proficiency (Schulte & Stevens, 2015).

Other factors relating race to IEP status is not only the racial breakdowns of students with IEPs, but also the extent to which services are utilized related to race. It has been established that racial disparities exist in special education in that minority groups are overrepresented in special education (Skiba et al., 2008). This dates back to the civil rights era when placing minority students in special education served to maintain racial segregation, rather than serve the interests of disabled students (Skiba et al., 2008). The Individuals with Disabilities Act (IDEA), recognized this disproportionality and emphasized the importance of efforts to avoid intensifying problems related to mislabeling and high dropout rates among minority children with disabilities (Individuals With Disabilities Education Act, IDEA, Public Law No. 94- 142, 1975). IDEA now mandates monitoring disproportionality, and intervening where it is found, however, compared to the non-disabled population, a higher proportion of minority students can still be found in special education (Skiba et al., 2008). This may be due to bias in assessments, or the tendency for minority students to be of poor socioeconomic backgrounds, which results in them performing poorly on standardized tests and accordingly being placed in special education (Skiba et al., 2008). Some suggested solutions to the issue of disproportionality are teacher training in a culturally responsive pedagogy, culturally responsive behavioral response, and prevention and

early intervention services offered early to all students (Skiba et al., 2008). However as long as the problem of disproportionality of minorities in special education persists, the problem of minority utilization will also. The University of Central Florida Child Health Research Group (2017) noted that Black, Hispanic, and low income students are more likely to have chronic health conditions compared to White and wealthy peers, and they are also more likely to underutilize health services. For this reason researchers hypothesized that minority students would also underutilize school services (University of Central Florida Child Health Research Group et al., 2017). Likely, detrimental health and access to health services contribute markedly to the problem of lower school success among minority students (University of Central Florida Child Health Research Group et al., 2017). Based on these findings, the duality of the nature of problems surrounding race and services can be recognized. There is indeed an overrepresentation of minority students in special education, but also a population of minority students underutilizing services (Skiba et al., 2008; University of Central Florida Child Health Research Group et al., 2017). These findings are not necessarily in conflict with one another; it could be an indication that there are some minority students in special education who do not necessarily have special needs but are underperforming academically as a result of other issues related to inherent bias in assessments and factors relating to socioeconomic status. Conversely, these findings also indicate there may be students of racial minorities receiving special education, but who are not receiving the specific services necessary for them to achieve their full academic potential.

#### *Socioeconomic student factors impacting achievement and IEP services*

Socioeconomic status (SES) is further linked to student performance and IEP status in that it dictates the resources accessible to students and also, in part, the environment they exist

in. A number of factors can be considered measures of socioeconomic status in the existing literature, including eligibility for free and reduced price lunch (FRPL), household income, and poverty status. Students who qualify for FRPL are consistently reported to have poorer achievement than non-FRPL eligible students (Schulte & Stevens, 2015). Family income and poverty status have been found to be significant predictors of IQ scores in students as early as 5 years old, even after accounting for parent education and race (McLoyd, 1998). Though dependent upon the duration of poverty status, growing up in an impoverished setting has been found to be associated with detrimental effects on early cognitive development, school achievement, and socio-emotional functioning (McLoyd, 1998). That being said, students who were transiently poor at some point in childhood still demonstrate poorer IQ and academic achievement than never-poor peers, though the effects are not as deleterious compared to those of students who consistently lived in poverty (McLoyd, 1998). In fact, it has been reported that for every year a child lives in poverty, the chances they will be held back from advancing to the next grade level or placed in special education increases by 2-3% (Zill et al., 1995). Teacher perspectives about low SES students unfortunately plays a role in the achievement gaps, since as early as kindergarten, teachers report viewing low income students as less mature and having fewer self-regulatory skills than their peers, and as such, teachers tend to have lower expectations for such students (McLoyd, 1998).

In a longitudinal study of achievement gaps, the gap between all FRPL eligible and non-eligible students widened over time in non-disabled students (Shin et al., 2013). Special education and FRPL-eligible student achievement gaps are significantly lower than non-special education and non-FRPL-eligible students even after controlling for each other's effects (Shin et al., 2013). Interestingly, Shin et al. (2013) found that achievement gaps between special



education and non-special education students were sustained over time, while gaps between FRPL-eligible and ineligible students widened over time. From a reparative perspective, this can be taken to mean that children from disadvantaged backgrounds are behind at the beginning of the school year and will continue to do poorly across school years (Shin et al., 2013). One possible explanation for growing gaps is that early information in mathematics and reading is easier to acquire, while later material is more difficult to master (Shin et al., 2013).

### *Parent and school factors impacting achievement and IEP services*

There are a number of factors identified in the literature which may influence the level of parent involvement in schools, however strong evidence supports parental engagement as improving outcomes for students in special education (Carlson et al., 2020). IDEA specifies the requirement of full and meaningful participation of parents in their child's education, however in practice this is not always the case (Individuals With Disabilities Education Act, IDEA, Public Law No. 94- 142, 1975; Carlson et al., 2020). According to interview data of Carlson et al. (2020) from parents of high school students receiving special education, potential barriers to engaging with schools include variable work schedules, reliable transportation, and family stressors. Many parents of students with disabilities report frustration with schools not being accommodating to their work schedules, and experiencing limited flexibility from employers, childcare providers, and school systems (Hill & Taylor, 2004). Furthermore, parent engagement can look different according to racial norms (Hill & Taylor, 2004), For example, there is a tendency for African-American parents to be more involved in academic activities in a home setting, while Euro-American parents are more likely to get involved in a school setting (Hill &

Taylor, 2004). Szumski & Karwowski (2012) found that disabled children of parents with higher SES more often end up in regular and integrative schools which are perceived by parents as more adaptive for academic success, than students with similar disabilities with parents of low SES. Parent education is also highly influential in the ways in which parents choose to engage with schools, in that having parents with higher education levels is positively associated with school involvement in the form of advocating for their child's placement in honors courses, and taking an active role managing their child's education (Baker & Stevenson, 1986). In the opposite way, parents of lower socioeconomic backgrounds often have lower educational attainment themselves, and as a result associate schooling with their own negative experiences and often feel inadequately prepared to question the teacher and school or advocate for their child in the same way highly educated parents tend to feel comfortable doing (Lareau, 1996).

Parent engagement is viewed by educators as inherently positive, however some parents' perspective is that it reflects a failure on the part of the school in that they must be an advocate for their child where the school is failing to support them (Carlson et al., 2020). Parents identified several teacher and school communication patterns that increase their satisfaction in their child's education. Among these were frequent teacher communication, including positive feedback about the student, as well as educators taking time to enhance parent understanding in the IEP process so that parents can be both informed and involved in decisions regarding placement and services (Carlson et al., 2020). There is much responsibility in teachers to draw out parent engagement to increase student success. According to Epstein and Dauber (1991), teachers who are ethnically and culturally different from their students are less likely to be familiar with their parents, and as such, they are more likely to perceive low parental involvement as parents being disinterested or uninvolved in schooling. There are also issues with

the lack of specificity of parental supports provided by schools. Most schools provide general support to parents of children with disabilities, such as parent training and support groups (Huscroft-D'Angelo et al., 2018). Huscroft-D'Angelo et al. (2018) reported that many schools had family support for specific disorders such as autism or traumatic brain injury but there was largely a lack of family services specific to emotion/behavioral disorders. Billingsley (2011) suggests that teacher quality is more influential than any school-based factor in student achievement in non-special education students, and likely this is also true for special education teachers.

The overall social class of the school students attend also seem to be associated with student achievement. Palardy (2008) found that low social class schools indicated less favorable learning conditions for students compared with high social class schools. A schools status as 'low social class' is related to the average SES of the students who attend it, but is also associated with less trained teachers, which likely also contributes to the poor achievement of the students who attend such schools (Palardy, 2008).

#### *Addressing a gap in the literature*

A body of research supports the idea that certain student, parent, teacher, and school factors can impact academic achievement in both special education and non-special education students. However, there is limited research of this phenomenon longitudinally, examining learning growth of different student groups. Furthermore, student factors such as gender, race, and socioeconomic status have not yet been investigated all together with relation to IEP status and learning growth. By investigating growth rather than achievement, students are compared to

themselves rather than a standard, or other students at a different time point, which gives a better picture of which students' needs are not being met from one year to the next.

## **Data and Methods**

### *Data*

I used public-use data from the National Center for Education Statistics's (NCES) Early Childhood Longitudinal Program, Kindergarten Class of 2011 (ECLS-K: 2011).

The ECLS program collects data to analyze the relationships among family, school, community, and individual factors with children's development, early learning, and achievement in school. The ECLS-K is a federally funded study which follows a nationally representative sample of children through their years of education. Data is collected annually from a variety of sources, including children, their families, their teachers, and their schools, as well as subject-specific test scores. ECLS-K administers achievement tests every spring, with the item response theory (IRT) test score meant to be comparable across grades.

This present study used data obtained in the spring of 4th grade and spring of 5th grade, with a filter of students with IEPs.

### *Surveys and Variables*

For the sample of ECLS-K participants in 4th and 5th grade demographic information, as well as information from caregiver, teacher, and school administrator surveys was used. Math and reading scores from 4th and 5th grade were also analyzed as a measure of learning growth.

Appendix A. includes a list of variables used from the ECLS-K.

The independent variables were gender, race, parent education, household income, years of teacher experience, the percentage of students in the school in special education, and the percentage of students in the school who were FRPL eligible and the dependent variable was students with IEPs' learning growth in math and reading from 4th to 5th grade.

### *Analysis*

Stata was used to conduct analyses. Descriptive statistics of mean characteristics and frequency distribution in continuous and categorical variables were calculated, including ECLS-K's sampling weights in order for the sample to be generalizable to a larger population. Additionally, regression tables calculated demonstrate the impact of various student, teacher, and school characteristics (see Appendix A) on learning growth in students with IEPs from 4th to 5th grade.

## **Findings**

Descriptive statistics of the Non-IEP and IEP student samples for both math and reading tests were calculated. Frequencies of genders, race/ethnicity, parent education, and household income, as well as means and standard deviations of 4<sup>th</sup> and 5<sup>th</sup> grade test scores and score growth are reported in Table 1. for the math test sample, and in Table 2. for the reading test sample.

Table 1. Demographics of Students by IEP Status (Math Sample)

	Non-IEP Students	Students with IEPs
<i>Gender</i>		
Female	51.6%	34.0%
Male	48.4%	65.9%
<i>Race/Ethnicity</i>		
White	53.9%	51.6%
Black/African American	8.2%	11.7%
Hispanic/Latino	25.5%	27.5%
Asian	6.8%	3.1%
Native American	1.3%	1.4%
Other/Multiple Race	4.3%	4.7%
<i>Parent / Education Level</i>		
HS or less	32.6%	43.2%
Some college/Voc./Tech program	29.7%	30.6%
BA or higher	37.7%	26.3%
<i>Income</i>		
\$25,000 or less	19.2%	31.8%
\$25,000- \$60,000	27.8%	31.3%
\$60,001- \$100,000	22.8%	18.4%
\$100,001 or greater	30.1%	18.6%
4 <sup>th</sup> Grade Test Score M (SD)	116.2 (15.04)	97.8 (22.48)
5 <sup>th</sup> Grade Test Score M (SD)	123.4 (14.79)	104.5 (22.97)
Delta Test Score M (SD)	7.2 (7.38)	6.7 (9.23)
N	6,275	975

Table 2. Demographics of Students by IEP Status (Reading Sample)

	Non-IEP Students	Students with IEPs
<i>Gender</i>		
Female	51.6%	33.9%
Male	48.4%	66.1%
<i>Race/Ethnicity</i>		
White	53.9%	51.5%
Black/African American	8.2%	11.7%
Hispanic/Latino	25.5%	27.4%
Asian	6.8%	3.1%
Native American	1.3%	1.4%
Other/Multiple Race	4.3%	4.7%
<i>Parent Education Level</i>		
HS or less	32.6%	43.1%
Some college/Voc./Tech program	29.7%	30.6%
BA or higher	37.7%	26.3%
<i>Income</i>		
\$25,000 or less	19.2%	31.6%
\$25,000- \$60,000	27.8%	31.3%
\$60,001- \$100,000	22.8%	18.6%
\$100,001 or greater	30.1%	18.4%
4 <sup>th</sup> Grade Test Score M (SD)	132.5 (12.53)	114.4 (18.58)
5 <sup>th</sup> Grade Test Score M (SD)	139.6 (13.12)	121.1 (19.61)
Delta test score M (SD)	7.1 (7.81)	6.7 (9.06)
N	6,278	970

Frequencies for teacher and school characteristics of years of teacher experience, percent of students in a school in special education, and percent of students in a school eligible for FRPL among the non-IEP and IEP student samples for each subject test were calculated. The frequencies for teacher and school characteristics of the math test sample is reported in Table 3. and of the reading test sample in Table 4.

Table 3. Teacher and School Characteristics, Math Sample

	Non-IEP Students	IEP Students
<i>Years as a teacher</i>		
1-2 years	6.8%	8.2%
3-5 years	11.5%	12.6%
6-10 years	21.0%	21.6%
11-15 years	20.0%	20.4%
16-20 years	16.2%	14.6%
>20 years	24.3%	22.6%
<i>Percent of students in special education</i>		
>10%	51.6%	37.7%
10% - 20%	38.9%	42.5%
20% - 30%	9.5%	19.8%
<i>Percent of students in school eligible for FRPL</i>		
0% to less than 25%	27.5%	21.9%
25% to less than 50%	25.2%	22.6%
50% to less than 75%	20.6%	23.2%
75% to 100%	26.7%	32.3%
N	6,275	975

Table 4. Teacher and School Characteristics, Reading Sample

	Non-IEP Students	IEP Students
<i>Years as a teacher</i>		
1-2 years	6.8%	8.2%
3-5 years	11.6%	12.6%
6-10 years	21.0%	21.6%
11-15 years	20.0%	20.5%
16-20 years	16.3%	14.4%
>20 years	24.3%	22.6%
<i>Percent of students in special education</i>		
>10%	51.6%	37.8%
10% - 20%	38.9%	42.5%
20% - 30%	9.5%	19.7%
<i>Percent of students in school eligible for FRPL</i>		
0% to less than 25%	27.6%	21.9%
25% to less than 50%	25.2%	22.6%
50% to less than 75%	20.5%	23.3%
75% to 100%	26.6%	32.3%
N	6,278	970

Linear regression analysis was used to test if student, parent, teacher and school factors significantly predicted math test score growth among students with and without IEPs (See Table



5.). The results of the regressions indicated that for non-IEP students, gender, race parent education, and household income were significant predictors ( $R^2 = .113$ ,  $F(22, 6252)=37.35$ ,  $p<.001$ ). It was found that being Black/African American ( $\beta = -1.31$ ,  $p<.001$ ) and Hispanic/Latino ( $\beta = -0.94$ ,  $p<.001$ ) significantly predicted decreased math test score growth among non-IEP students compared with White students. It was also found that, among non-IEP students, being female ( $\beta = 0.62$ ,  $p<.001$ ) having a parent with some college/vocational/technical training ( $\beta = 0.66$ ,  $p<.05$ ), a parent with a bachelor's degree or higher ( $\beta = 1.64$ ,  $p<.001$ ), a household income of \$25,001-\$60,000 ( $\beta = 0.87$ ,  $p<.001$ ), \$60,001- \$100,000 ( $\beta = 1.10$ ,  $p<.001$ ), and \$100,001 or greater ( $\beta = 1.10$ ,  $p<.001$ ), were predictive of increased math test score growth compared with students who were male, whose parent had a high school education or less, and who had a household income of \$25,000 or less. Among IEP students, it was found that attending a school at which 75%-100% of students were eligible for FRPL ( $\beta = -2.24$ ,  $p<.05$ ), was predictive of decreased math score growth ( $R^2 = .035$ ,  $F(22, 952)=2.64$ ,  $p<.01$ ) compared with students who attended a school where 25% or less students were eligible for FRPL.

Table 5. Predicted Math Test Score, Linear Regression (N= 8,435)

	Non-IEP Students		IEP Students	
	Coefficient	Standard Error	Coefficient	Standard Error
Constant	26.40	.916	17.68	2.041
<i>Gender (ref. Male)</i>				
Female	0.62***	.179	-1.18	.626
<i>Race/Ethnicity (ref. White)</i>				
Black/African American	-1.31***	.357	-1.12	1.064
Hispanic/Latino	-0.94***	.253	-0.65	.791
Asian	0.30	.362	-0.13	1.715
Native American	-0.65	.798	-0.99	2.491
Other/Multiple Race	-0.86	.441	-0.05	1.423
<i>Parent 1 Education Level (ref. HS or less)</i>				
Some college/Voc./Tech program	0.66*	.241	1.06	.755
BA or higher	1.64***	.272	1.719	.923
<i>Income (ref. \$25,000 or less)</i>				
\$25,001- \$60,000	0.87***	.272	0.20	.774
\$60,001- \$100,000	1.10***	.317	0.43	1.013
\$100,001 or greater	1.10***	.338	-0.21	1.037
<i>Years as a teacher (ref. 1-2)</i>				
3- 5 years	0.57	.425	-0.23	1.314
6- 10 years	0.66	.389	-0.54	1.210
11- 15 years	0.39	.392	-0.13	1.217
16- 20 years	0.63	.404	-1.36	1.291
>20 years	0.46	.386	-1.27	1.207
<i>Percent of students in special education (ref. &gt;10%)</i>				
10%- 20%	0.19	.187	-0.68	.656
20%- 30%	0.18	.313	0.40	.820
<i>Percent of students eligible for FRPL (ref. 0% to less than 25%)</i>				
25% to less than 50%	0.00	.253	-1.71	.905
50% to less than 75%	-0.40	.283	-0.83	.957
75% to 100%	-0.94	.311	-2.24*	1.001
Adjusted R <sup>2</sup>		0.113		0.035
N		6,275		975

\*p&lt;.05 \*\*p&lt;.01 \*\*\*p&lt;.001

Linear regression analysis was used to test if student, parent, teacher and school factors significantly predicted reading test score growth among students with and without IEPs (See

Table 6.). The results of the regressions indicated that for non-IEP students, gender, race parent education, household income, teacher experience, and percent of students in school eligible for FRPL were significant predictors ( $R^2 = .075$ ,  $F(22, 6255) = 24.10$ ,  $p < .001$ ). It was found that being female ( $\beta = -0.42$ ,  $p < .05$ ), Black/African American ( $\beta = -1.39$ ,  $p < .001$ ), Hispanic/Latino ( $\beta = -0.80$ ,  $p < .01$ ), and attending a school where 50% to less than 75% ( $\beta = -0.70$ ,  $p < .05$ ), and 75%-100% ( $\beta = -1.36$ ,  $p < .001$ ), of students are FRPL eligible significantly predicted decreased reading test score growth among non-IEP students compared with students who were male, White, and attended a school where 0% to less than 25% of students were FRPL eligible. It was also found that, among non-IEP students, having a parent with some college/vocational/technical training ( $\beta = 0.91$ ,  $p < .001$ ), a parent with a bachelor's degree or higher ( $\beta = 1.12$ ,  $p < .001$ ), a household income of \$25,001-\$60,000 ( $\beta = 0.98$ ,  $p < .001$ ), and \$60,001- \$100,000 ( $\beta = 0.88$ ,  $p < .01$ ), and having a teacher with 3-5 years of experience ( $\beta = 0.98$ ,  $p < .05$ ), were predictive of increased reading test score growth compared with students whose parent had a high school education or less, who had a household income of \$25,000 or less, and had a teacher with 1-2 years of experience. Among IEP students, it was found being Black/African American ( $\beta = -2.66$ ,  $p < .01$ ), and having a teacher with 3-5 years of experience ( $\beta = -3.47$ ,  $p < .05$ ), or 16-20 years of experience ( $\beta = -2.54$ ,  $p < .05$ ), were predictive of decreased reading score growth ( $R^2 = .029$ ,  $F(14, 1085) = 1.63$ ,  $p = .066$ ) compared to IEP students who were White and had a teacher with 1-2 years of experience.

Table 6. Predicted Reading Test Score, Linear Regression

	Non-IEP Students		IEP Students	
	Coefficient	Standard Error	Coefficient	Standard Error
Constant	31.40	1.213	18.02	2.322
<i>Gender (ref. Male)</i>				
Female	-0.42*	.190	-0.85	.604
<i>Race/Ethnicity (ref. White)</i>				
Black/African American	-1.39***	.380	-2.66**	1.016
Hispanic/Latino	-0.80**	.272	-0.89	.765
Asian	0.28	.390	-3.08	1.650
Native American	0.26	.863	2.18	2.395
Other/Multiple Race	0.45	.476	-0.80	-1.370
<i>Parent 1 Education Level (ref. HS or less)</i>				
Some college/Voc./Tech program	0.91***	.261	-0.44	.727
BA or higher	1.12***	.296	-0.44	.889
<i>Income (ref. \$25,000 or less)</i>				
\$25,001- \$60,000	0.98***	.294	-0.69	.746
\$60,001- \$100,000	0.88**	.342	-0.72	.968
\$100,001 or greater	0.55	.365	-0.24	1.081
<i>Years as a teacher (ref. 1-2)</i>				
3- 5 years	0.98*	.459	-3.47*	1.266
6- 10 years	0.48	.420	-1.29	1.165
11- 15 years	0.53	.424	-1.08	1.171
16- 20 years	0.35	.437	-2.54*	1.244
>20 years	0.57	.417	-0.54	1.162
<i>Percent of students in special education (ref. &gt;10%)</i>				
10%- 20%	-0.35	.202	-0.83	.632
20%- 30%	-0.05	.338	-0.87	.791
<i>Percent of students eligible for FRPL (ref. 0% to less than 25%)</i>				
25% to less than 50%	-0.14	.273	0.24	.873
50% to less than 75%	-0.70*	.305	0.54	.921
75% to 100%	-1.36***	.337	-0.65	.964
Adjusted R <sup>2</sup>		0.075		0.029
N		6,278		970

\*p&lt;.05 \*\*p&lt;.01 \*\*\*p&lt;.001

## Discussion

This study was guided by two specific research questions:

1. What student characteristics can predict diminished learning growth in 5<sup>th</sup> grade students?
2. What teacher and school characteristics can predict diminished learning growth in 5<sup>th</sup> grade students?

It was hypothesized that students with IEPs who are minority students, students of low socioeconomic backgrounds, and students with parents who are less highly educated would demonstrate less learning growth compared with peers. It was also hypothesized that IEP students with inexperienced teachers, attending schools in which a high percentage of students are in special education, and attending schools with a high percentage of students that are FRPL eligible would demonstrate lower learning growth. These hypotheses were supported by prior literature, however the results of the present study mostly did not support these hypotheses.

While non-IEP students were found to have significantly lower learning growth in both math and reading scores predicted by race being Black or Hispanic, lower parental educational attainment and lower household income, the same was not true for IEP students, at least not consistently across both math and reading scores. For IEP students, attending a school where 75%- 100% of students were FRPL-eligible was predictive of lower math score growth, and being black was predictive of lower reading score growth. Teacher experience was predictive of reading score growth, however only in some experience ranges and the direction of the effect was conflicted between IEP and non-IEP students. Teachers with 3-5 years of experience were predictive of increased score growth in non-IEP students, compared with non-IEP students with teachers with 1-2 years of experience, however in IEP students, teachers with 3-5 years of

experience, as well as teachers with 16-20 years of experience were predictive of decreased score growth. Gender was also predictive of math score growth only in non-IEP students, however female students were predicted to have greater growth than male students in math scores, and less growth than male students in reading scores.

### *Implications*

The descriptive statistics uncovered a number of trends in the populations making up the IEP student sample, which are supported by previous literature. One such trend is a disproportionate amount of minority student and low SES students in special education. In the math and reading samples, there was 3.5% difference in the percentage of Black students in the IEP student sample, compared with the non-IEP sample. There was also an average of a 1.95% difference between the non-IEP and IEP samples in the Hispanic students. This affirms the findings of Skiba et al. (2008), which found higher proportions of minority students in special education. Relatedly, in both test samples, 11.4% more of the non-IEP student sample had a highly educated parent with a Bachelor's degree or higher, and on average between test samples, 12.5% more of IEP students had a household income of \$25,000 or less, indicating markers of lower SES among the IEP sample. Skiba et al. (2008) also cited assessment bias and socioeconomic disadvantage impacting low test scores as possible reasons for increased placement in special education, so the finding that there were more low SES students in the IEP student sample also aligns with this. If this disproportionality is viewed as a segregation of minority and low-income students in special education, desegregation policies could foster student growth among students with IEPs. Another implication of this finding is that there is a greater proportion of minority and low SES students in special education who may be either

misplaced there, or may be underutilizing services available to them (Skiba et al., 2008; University of Central Florida Child Health Research Group, 2017). Potential solutions to issues regarding the makeup of student populations in special education are complex, but some steps may include culturally appropriate assessment, teacher training in a culturally responsive pedagogy, culturally responsive behavioral response, and prevention and early intervention, in which supports are offered early to all students (Skiba et al., 2008).

A key finding from the math student sample, though not consistent in the reading test sample, was significantly lower growth in IEP students from a low-income schools, meaning one with 75%- 100% of students qualifying for FRPL. The significance of this finding is deleterious, as Shin et al. (2013) found that achievement gaps between non-FRPL eligible and FRPL eligible students widened significantly over time. This finding is in agreement, and based on Shin et al. the diminished learning growth from 4<sup>th</sup> to 5<sup>th</sup> grade could be expected to be even greater in later years. Furthermore, a school in which 75%- 100% of students qualify for FRPL, being considered a low social class school, is also likely to be one where teachers have less experience and training, and work in a more chaotic environment in which there are more safety concerns, less control over the environment, and an overall lack of curricular alignment (Palardy, 2008). One way to attempt to resolve the issue of poor achievement at low SES schools may be to increase teacher salaries at such schools, as this has been suggested to have a positive impact on learning and reduce the learning gap between low-SES and high-SES students (Palardy, 2008).

A major finding from the reading test sample was that Black IEP students could be predicted to have lower reading score growth compared to White IEP students. This is in agreement with the findings of Schulte and Stevens (2015), which found Black students to be among the racial groups with lower academic achievement. Based on these findings, more

research is needed to identify how best to serve Black students, and particularly Black students with IEPs, in order to close the learning growth gap in reading scores.

This study found several significant findings regarding student factors associated with diminished learning growth among non-IEP students. Being a student who was Black, had parents with a high school education or less, or had a household income of \$25,000 or less was predictive of low score growth in both math and reading. This supports the claims of a number of studies which found minority and low SES students to have less academic success than their peers (McLoyd, 1998; Schulte & Stevens, 2015; Shin et al., 2013; Szumski & Karwowski 2012; University of Central Florida Child Health Research Group et al., 2017; Zill et al., 1995). One policy implication to counter the detrimental effects of belonging to these subgroups of students is targeting primarily poor families for income subsidies and tax relief to reduce the impacts of poverty on child development (McLoyd, 1998).

Overall, there was a lack of significant findings in the present study with regard to IEP students. The most likely reason for this relates to the measurement error of the 'IEP status' variable. This is discussed in detail in the following limitations section, but in short, the IEP student sample in this study represented a wide range of students with varying abilities, and so by generalizing them to just their IEP status rather than specifying group differences among disabilities and services received, it is likely findings were weakened. Additionally, it is possible that by looking at learning growth from 4th to 5th grade, gaps in achievement have not yet widened to the point that the difference in growth is significant. Shin et al. (2013) suggested that learning gaps increase in later years of education as math and reading material increases in difficulty. Schulte and Stevens (2015) reported that math and reading learning growth in students



with disabilities is quite rapid in early years of education, and then stagnates and diminishes as grade level increases.

### *Limitations*

Because of the accessibility restraints of using the ECLS-K, there are limitations to the analysis in the present study. One such limitation is that the sub-sample used for analysis does not include weights and therefore cannot be used to make representative estimates to a larger population. Another limitation is the broadness of the variable of IEP status. Data regarding detailed aspects of students' IEPs and their specific disabilities is considered restricted data, and therefore cannot be accessed in the public-use data file used for this thesis. Due to the time constraints of a one-semester thesis, it was not plausible to seek approval to access restricted data, and therefore the variable of IEP status was used instead. It is recognized that the students in the 'students with IEPs' category represent a wide range of student abilities and that it is possible that student learning growth broken down into more narrow categories of IEP goals, student disabilities, and services may have yielded different results. Finally, The ECLS-K likely does not have the capability to track achievement of students who exited special education, or no longer had an IEP; had these students still had an IEP, they may have represented higher than average achievement compared to other students with IEPs

### *Future Directions*

As suggested by the above limitations, it is likely that a different research design could show the results that were expected based upon prior research, of students with IEPs experiencing lower test score growth associated with gender, race, and socioeconomic status. It

would be interesting to see how learning growth looks between different grade levels, perhaps across a longer time span, or between older cohorts of students. Finally, researchers might also conduct a similar study using the restricted ECLS-K data in order to distinguish between types of IEPs and be able to draw more solid conclusions based on students' disabilities and/or the services they receive

### *Conclusion*

Though the findings of this study found few significant findings regarding students with IEPs, the design of the study may serve to inform future research, which might better determine how to meet the needs of specific populations of students in special education. It certified prior findings regarding trends in ethnic and socioeconomic makeup of populations of students with disabilities. This research has contributed to my own understanding of quantitative research methods, as well as the trends in both achievement and learning growth among students with and without IEPs among different subgroups. It is my hope that this study will inform future projects and policies that may improve educational outcomes of disadvantaged students.

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**Appendix A.**

<b>ECLS-K Code</b>	<b>ECLS-K Label</b>
X_CHSEX_R	Child Composite Sex Revised
X8PAR1ED_I	4th Grade Parent 1 Education Level (Imputed)
X9PAR1ED_1	5th Grade Parent 1 Ed Level (Imputed)
X8INCCAT_I	4th Grade Household Income
X9INCCAT_I	5th Grade Household Income
A8YRSCH	4th Grade Years Teacher Taught At This School
A9YRSCH	5th Grade Years Teacher Taught At This School
X8RSCALK5	4th Grade Reading
X9RSCALK5	5th Grade Reading
X8MSCALK5	4th Grade Math
X9MSCALK5	5th Grade Math
G8IEPX	4th Grade Student IEP Status
G9IEPX	5th Grade Student IEP Status
S8SPD%	4th Grade % School IEP
S9SPD%	5th Grade % School IEP
S8PCTFLN_I	4th Grade % FRPL
S9PCTFLN_1	5th Grade % FRPL

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