Examining the Association between Racial Disparities in Exclusionary Discipline Practices and Academic Gains

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**Abstract**

Previous literature reported that Black students receive out-of-school suspensions and expulsions at disproportionately higher rates and have lower test scores than White students. This study provides recent evidence on the relation between racial disparities in discipline and in achievement, with particular focus on gains in schools across the nation. We link school-level discipline data in 2017-18 from the Civil Rights Data Collection to student-level assessment data from NWEA. Leveraging assessment data in the fall, winter, and spring for 1,308,004 students in grades 6 to 8 in 6,841 schools, this is the first study to estimate the association between exclusionary discipline and within-year academic gains. We report two main findings. First, Black-White suspension gaps and achievement gaps persist (correlation= .15 for math, .19 for reading) in the vast majority of schools in 2017-18 despite the announcement of many reforms in school discipline practices. Second, Black-White disparities in exclusionary discipline rates are associated with lower learning rates during the school year for Black students in math but there is no association for reading. These findings point to discipline disparity as a key factor contributing to the expansion of Black-White achievement gaps during the school year reported in the extant literature.

**Key Words**

school discipline

academic growth

middle school

**Examining the Association between Racial Disparities in Exclusionary Discipline Practices and Academic Gains**

School discipline disparities have been a key focus for educators and policymakers over the past decade. Studies have consistently documented profound racial disparities in exclusionary school discipline (e.g., suspension or expulsion) as schools suspend Black students at a rate three times that of White students nationally (US Department of Education Office for Civil Rights, 2016). Further, Black students are more likely to be exposed to schools with punitive disciplinary cultures and higher security measures, even if they do not necessarily experience exclusionary discipline individually (Kupchik & Ward, 2011; Rios, 2011). Despite increased attention, adoption of alternative discipline policies like restorative justice, and slight recent declines in the overall prevalence of exclusionary discipline, racial disparities in exclusionary discipline continue to be a core aspect of educational inequality (Hashim et al., 2018; Hwang et al., 2021). These disparities are also connected to inequality in adulthood outcomes, as exposure to school discipline has been linked to increased criminal justice contact, decreased social safety net participation, and worse postsecondary and labor market outcomes (Bacher-Hicks et al., 2019; Davison et al., 2022).

While exclusionary school discipline is associated with negative long-term outcomes, the academic impact of attending a school where school discipline disparities are proliferating is less clear. Understanding the academic impacts of exclusionary school discipline is vital given that racial disparities in student achievement are also sizeable and associated with differential outcomes related to educational and economic mobility. Recent data show Black students start kindergarten with substantially lower test scores than White students, and the disparities expand from kindergarten to 8th grade (from 0.5 to 0.7 standard deviations in math and from 0.4 to 0.6 standard deviations in reading) (Kuhfeld et al., 2021). Achievement gaps in elementary and middle school grades carry important implications for downstream educational and economic opportunities and outcomes. The on-time high school graduation rate for Black students is 80% compared to 89% for White students (National Center for Education Statistics (NCES), 2021). Black students have consistently been less likely to enroll in postsecondary education than White students (by about 5 percentage points) and are severely underrepresented in selective universities (NCES, 2022; Reardon et al., 2012), and ultimately earn less than their White counterparts by an average of 32% (e.g., Gould, 2020).

While both achievement and school discipline disparities are associated with deleterious outcomes, the current understanding of the mechanisms that link these disparities is less clear. Although some studies have found that out-of-school suspensions and expulsions are associated with lower test scores for Black students relative to their White classmates (Liu et al., 2021; Noltemeyer et al., 2015; Shi & Zhu, 2021; Shores et al., 2020), the relationship between discipline and achievement is complex. One theory is that discipline and achievement gaps are closely related because exclusionary discipline can lead to loss of instruction time (Losen & Martinez, 2020). Another (and by no means mutually exclusive) theory is that suspensions and expulsions can lead to academic disengagement, which is also likely to negatively impact achievement (Morris & Perry, 2016; Townsend, 2000). However, the direction of causality is difficult to identify. Students with low initial academic achievement may be more likely to exhibit disruptive behaviors and/or be subject to exclusionary discipline (e.g., Arcia, 2006); and losing instructional time due to disciplinary action may contribute to less engagement and lower achievement (e.g., Losen & Martinez, 2020; Scott & Barrett, 2004). Thus, not only is establishing a causal link between discipline and achievement complicated; even establishing the direction of the causality is fraught.

Thus, this paper adds to a growing body of literature by investigating the association between school discipline disparities and academic gains. Our analyses add value by providing insights into how school discipline rates relate to differential academic growth trajectories. Through examining achievement gains instead of static achievement (a.k.a. achievement “status” or “level”), we are able to better understand school contributions to student learning and are less reliant on static measures that may be heavily influenced by family-driven social and economic advantages of students (Houston & Henig, 2021; Reardon, 2019). Further, we build on prior studies (e.g., Shores et al., 2020) that relied on data that predate 2015 and a period of key state and district-level school disciplinary reforms. While studies have shown that school disciplinary disparities persist despite these reforms (see Davison et al., 2021; Hashim et al., 2018; Hwang et al., 2022), our study is noteworthy considering the current context in which many disparities were exacerbated by the pandemic (Kuhfeld & Lewis, 2022; Welsh, 2022).

We link school-level discipline data in 2017-18 from the Civil Rights Data Collection (CRDC) to student-level assessment data from the NWEA1 Growth Research Database (GRD) and school-level characteristics from the Stanford Education Data Archive (SEDA, 2021). Leveraging assessment data in the fall, winter, and spring of 2017-18 for 1,308,004 students in grades 6 to 8 in 6,841 schools across the nation, this is the first study to estimate the association between exclusionary discipline and within-year academic gains. Specifically, we use these data to ask two primary research questions:

1. Do schools with larger Black-White discipline gaps also have larger Black-White achievement gaps?
2. How are school discipline gaps associated with disparities in math and reading learning rates?

Our analyses show that Black-White suspension gaps and achievement gaps persist (correlation = .15 for math, .19 for reading) in the vast majority of schools in 2017-18. We also find that Black-White disparities in exclusionary discipline rates are associated with lower learning rates during the school year for Black students in math, but there is no association for reading. These findings point to discipline disparities as a key factor contributing to the expansion of Black-White achievement gaps.

**Literature Review**

**Theoretical Context Linking Exclusionary Discipline and Achievement**

Researchers and youth advocates have drawn much attention to the increased prevalence of security measures, punitive discipline practices, and law enforcement in schools. To describe this process, scholars have suggested that these environments facilitate negative outcomes (i.e., increased contact with the criminal justice system, lower educational achievement, etc.), operating from a framework of the “school-to-prison pipeline” (Hirschfield 2009; Wald & Losen 2003). Building on this framework, scholars have understood the context of schooling environments as the school-to-prison nexus, which describes an interconnected web of policies, practices, and ideologies that link the education and criminal justice systems (Goldman & Rodriquez, 2021; Meiners, 2007; Sojoyner, 2016). This framework is important for understanding the context of punitive discipline as an ecosystem through which racial stratification proliferates.

These environments are disconcerting because they not only increase the likelihood of exposure to punitive discipline but also work against building optimal learning environments. Particularly, qualitative research shows that exclusionary school disciplinary practices have a profound deleterious impact on how students can engage with academic material (Bell & Puckett, 2020). When thinking of both discipline and achievement disparities, it is thus important to consider how school disciplinary practices may play a role in shaping academic outcomes even if students do not personally experience exclusionary discipline. Further, because Black and Latinx students are disproportionately likely to attend schools with punitive environments, disentangling the mechanisms that drive discipline and achievement disparities is vital to facilitating optimal and equitable schooling environments.

**Racial/Ethnic Discipline Gaps**

The consequences of punitive disciplinary environments are most-evident in the profound racial disparities in exclusionary discipline. Multiple studies identify substantial gaps in exclusionary discipline outcomes between racially minoritized and White students, highlighting especially large and robustly estimated disparities between Black and White students (e.g., Barrett et al., 2018; Gopalan, 2019; Liu et al., 2021; Shi & Zhu, 2021; Shores et al., 2020). During the 2015-16 school year, for example, Black students lost 103 days of instruction per 100 students enrolled due to suspensions compared to 21 days for White students (Losen & Martinez., 2020). Using data from a large district in California, Liu et al. (2021) found that schools are 4 percentage points or 6 times more likely to suspend Black students than White students (whose suspension rate is 0.6%) and 12 percentage points or 2 times more likely to give a disciplinary referral to Black students than White students (whose referral rate is 4.5%) in the same school in a given school year; further, among Black and White students involved in the same incidents of misconduct, schools were 2 percentage points, or 67%, more likely to suspend the Black student. Barrett et al. (2018) and Shi and Zhu (2021) similarly reported that schools give Black students harsher discipline than White students, even after controlling for a variety of factors.

A related body of research shows that school factors, such as teacher perceptions and principal decision-making are critical in shaping these disparities (Jarvis & Okonofua, 2020; Lindsay & Hart, 2017; Santiago-Rosario et al. 2021; Sorensen et al., 2020). Studies that decomposed variations in discipline rates also tended to find larger between-school than within-school variations (Kinsler, 2011; Ritter & Anderson, 2018). These findings add to the research that found school policies and practices had strong associations with overall discipline rates, highlighting the need to focus on the influence of school-level characteristics on both exclusionary practices and racial/ethnic disparities.

**Student-Level Discipline and Achievement**

The increased exposure to exclusionary discipline by Black and Latinx students may also exacerbate disparities in achievement. Many studies have found negative associations between exclusion and achievement (e.g., Anderson et al., 2019; Arcia, 2006; also see Noltemeyer et al., 2015 for a review). However, most such studies are descriptive. To our knowledge, only one quasi-experimental study addressed school- or district-level discipline rates and achievement (Bacher-Hickes et al., 2019), which found that moving to a high-discipline school had negative effects on long-run outcomes, such as education attainment and the probability of incarceration, especially on male and racially minoritized students.

One reason there is not more quasi-experimental research on this topic is that establishing the direction of causality between discipline and achievement remains a challenge. Some have argued that discipline likely affects achievement. For instance, exclusion and the resulting loss of instructional time (as well as the negative label that often accompanies disciplinary issues) might lead students to select into low-achieving peer groups. Having lower-achieving peers can, in turn, lead to lower academic achievement (Duxbury & Haynie, 2020; Losen & Martinez, 2020). By contrast, there is an argument that low achievement causally affects discipline. Specifically, initially low achievement can also result in diminished student academic concept, antisocial propensity, and disruptive behaviors, which in turn may lead to disciplinary action (Savolainen et al., 2012). In short, quasi-experimental studies could benefit from a clearer theory behind the mechanisms by which achievement and discipline impact each other, a theory that can likely be informed by descriptive evidence.

Beyond quasi-experimental studies, there are also few studies that examine the association between discipline gaps and growth. For example, Perry and Morris (2014) leveraged data from the Kentucky School Discipline Study and estimated the association between the schools’ overall out-of-school suspension rates and students’ achievement percentiles.Unlike other research, this study was able to incorporate repeated measures of academic achievement both within and across years, using MAP Growth assessment scores in two semesters in each of three years for a total of six terms. However, the study used percentiles as the measure of academic achievement, thereby restricting the inferences about achievement to relative comparisons between students instead of learning gains.

**The Role of Schools in Discipline and Achievement**

Scholars have sought to understand how structural factors contribute to student outcomes. Particularly, school factors play a major role in determining both disciplinary practice and academic progress. Disciplinary practice is not only a function of student behavior, but also of staff perceptions, policies, and decision-making. For example, Skiba et al. (2014) showed that mean school achievement level, the percentage of Black student enrollment, and principal perspectives contributed to the probability of out-of-school suspension and expulsion. Further, school-level variables were among the strongest predictors of racial disparities in discipline (Skiba et al., 2014). Other studies found that attending a high-suspension school is negatively associated with math achievement (Jabbari & Johnson, 2020), and has strong negative effects on adult incarceration rates and educational attainment (Bacher-Hicks et al., 2019).

Discipline and achievement are both related to within-school peer groups. For example, exclusionary discipline practices are associated with the academic outcomes of not only students who are being penalized, but also their peers in the same school (Perry & Morris, 2014). Further, school and district approaches to discipline can have different and potentially contradictory effects. On one hand, removing offending students may shift the student make up of a given class in a way that helps curb problematic behaviors and creates a better learning environment for the remaining students (Anderson et al., 2017; Hwang & Domina, 2021; Kinsler, 2013; Noguera, 2003). On the other hand, high rates of disciplinary action may disrupt classroom dynamics, create student apathy and disconnection, and lower motivation and achievement for all students (Anyon et al., 2016; Jabbari & Johnson, 2020; Nolan and Willis, 2011; Skiba & Peterson, 2000). Thus, the association between exclusionary discipline policy and practices and overall achievement at the school merits investigation.

**Gaps in Discipline and Achievement**

However the association between achievement and discipline is explained, there is also a strong correlation between race-based gaps in achievement and discipline. Articles reviewing such literature point out that racial/ethnic gaps in discipline and academic achievement are closely related, even “two sides of the same coin” (Gregory et al., 2010; Townsend, 2000). Yet, little research has investigated the association between the discipline gap and the achievement gap. To the best of our knowledge, four recent papers address this important question, oftentimes employing multilevel modeling.

Pearman and colleagues (2019) used district-level data from SEDA and the Civil Rights Data Collection to estimate associations between Black-White and Hispanic-White discipline gaps and achievement gaps in grades three to eight. They found that the association between Hispanic-White discipline and achievement gaps was close to zero and non-significant once they controlled for community- and district-level factors, but that a positive association between Black-White discipline gaps and achievement gaps persisted even after controlling for a variety of covariates (e.g., indicators of school poverty). In particular, Pearman et al. (2019) drew on two panels of data from the 2011–2012 and 2013–2014 school years and estimated models with district- and year-fixed effects. They also treated both achievement and discipline as the dependent variable (in separate models) given uncertainty about the causal direction of the relationship between the two. Their analyses did not examine gains in achievement, nor their relation to discipline gaps.

Gopalan (2019) also used 2013-14 discipline data from the Civil Rights Data Collection and achievement and covariate data from SEDA to examine variations in discipline gaps and the association between discipline gaps and achievement gaps. She found substantial variation in Black-White and Hispanic-White discipline gaps across the country, which were only partially explained by social and economic characteristics of the districts. Importantly, she observed a modest, significant relationship between the Black-White discipline gap and the Black-White achievement gap, with one standard deviation in the former associated with 0.12 standard deviation of the latter even after controlling for a host of covariates.

Shores et al. (2020) also used district-level test scores from SEDA and three years of data (2011-12, 2013-14, 2015-16) from the CRDC to examine the Black-White gap in several education outcomes. They found that Black-White gaps in test scores, disciplinary action, grade-level retention, placement into Gifted and Talented Education and Special Education, and Advanced Placement course-taking are large and correlated, even after controlling for racial differences in socioeconomic status and neighborhood context. In addition, this study found that gaps are clustered, meaning that in districts where Black students face socioeconomic disadvantage, they are also likely to face multiple education gaps, including those in disciplinary action and test scores.

Morris and Perry (2016) examined how between- and within-person variation in out-of-school suspensions related to achievement trajectories by race. Using a sample of 16,248 students in grades 6 to 10 from the Kentucky School Discipline Study, they estimated growth curves using students’ MAP Growth test scores in the spring of 2009, 2010, and 2011 (their models included a student random effect, but treated schools as fixed, generating a within-school interpretation of their results). Using models that treated suspension as a mediator of the relationship between race and achievement, they found that school suspensions explained about one-fifth of Black-White achievement differences in math and reading. However, the study by Morris and Perry (2016) had several limitations, including a sample from only a single district in Kentucky, primarily examining within-school effects, and focusing on between- rather than within-year growth. That is, the study did not examine within-year gains, an important oversight given research showing that Black-White achievement gaps often widen during the school year (Kuhfeld et al., 2021; Quinn et al., 2016; von Hippel et al., 2018). In general, there has not been much research focused on the relation between racial/ethnic discipline gaps and differential rates in learning gains within the school year.

**Current Study**

Our study extends the literature by investigating the relationship between school discipline disparities and academic gains. Specifically, we capitalize on the ability to examine within-year gains in achievement to investigate whether achievement gaps that develop during the year are associated with differential exclusionary discipline gaps. By estimating associations between the racial/ethnic gaps in discipline rates and within-year achievement gains, our goal is not to establish the causal impact of disciplinary action, but to further understand the relation between exclusionary discipline and student academic progress, which is currently very limited.

Understanding the links between school discipline gaps and academic gains is particularly important in light of school disciplinary reforms like restorative justice that have gained traction in recent years. Despite widespread implementation of alternative discipline policies that may have contributed to a declining prevalence of exclusionary school discipline (Hwang et al.,2022), studies have shown that racial disparities remain or are even widened in some cases following implementation (Davison et al., 2022; Hashim et al., 2018). Moreover, understanding the relationship between school discipline and academic gains are particularly relevant in light of reports of learning loss and challenges with reintegration into in-person school environments following the COVID-19 pandemic (Kuhfeld & Lewis, 2022; Welsh, 2022).

Such findings could inform the theory underlying quasi-experimental studies of this topic. In light of the challenges in disentangling the causal direction between discipline achievement, there are unique advantages to examining academic gains. While generally low achievement may lead to a higher probability of receiving exclusionary discipline due to students’ disruptive behavior or staff bias, it is unlikely that low academic gains would cause similar disciplinary action. In most schools, data on students’ academic gains are not prominently featured and are unlikely to become the basis on which students are labeled or stigmatized. The probability of students’ being suspended because of slow academic progress is extremely low; on the other hand, making slow progress during the academic year due to exclusion from instruction is highly probable. Nevertheless, this study is designed to provide descriptive evidence on the relation between the racial/ethnic disparities in discipline and within-year academic gains without speaking to the causal direction between the two.

**Data**

**Data Sources**

This study combines student-level assessment data from the NWEA GRD with school-level exclusionary discipline rates from the U. S. Department of Education CRDC (2021) and Common Core of Data (CCD) school-level covariates from the Stanford Educational Data Archive (SEDA, 2021).

The GRD is an expansive anonymized longitudinal student-level database, including data for 20% of public schools across the nation. Districts and schools choose to administer NWEA assessments for a variety of purposes, including monitoring student achievement and progress, school accountability, and staff evaluation. Although the GRD includes data on both public and private schools, we focus only on public schools for this paper.

In addition to math and reading assessment scores, the GRD also contains student-level demographic data (e.g., biological sex and race/ethnicity), which schools share with NWEA through a rostering process.

The CRDC includes biennial survey data on school-level characteristics, including student enrollment, discipline, chronic absenteeism, school expenditures, and student participation in math, science, and Advanced Placement courses, and SAT and ACT. These data are available for the whole school and by students’ sex, race/ethnicity, and special programs participation. We access the CRDC data through the Urban Institute’s Education Data Portal and use data from the year 2017-18, which is the most recent wave available.

SEDA includes district- and county-level measures of academic achievement and achievement gaps, as well as socioeconomic, demographic, and segregation characteristics. Covariates in SEDA data provide information on the families of children enrolled in each school district from the Education Demographic and Geographic Estimates (EDGE) and school-level characteristics from the CCD.

**Measures**

***Achievement Scores***

We use scores on the NWEA MAP Growth2 math and reading assessments for measures of academic achievement. The assessments are computerized, adaptive tests aligned to state content standards. Each test takes approximately 40 to 60 minutes, depending on the grade and subject area. The test begins with a question appropriate for the student’s grade level, and then adapts throughout the test in response to student performance. Students are assessed up to three times (fall, winter, and spring) during the school year. The assessment is vertically scaled to allow for the analysis of growth within and across grades. Test scores are reported in the RIT scale, where RIT stands for Rasch Unit and is 200 + 10 × θ, where θ refers to the logit scale units of the Rasch item response theory model.

During each test term (i.e., fall, winter, and spring), there is considerable variation in dates of test administration both within and across schools. To account for these differences, we use the test dates and school calendars to calculate the number of months that elapsed between the first day of the school year and the day on which students took their assessment.

**Discipline**

Following previous literature on exclusionary discipline (e.g., Losen & Martinez, 2020; Pearman et al., 2019), we focus on out-of-school suspension (OSS) as our main measure of interest. We calculate Black-White gaps using student counts reported by race in the CRDC data. For out-of-school suspension, we first calculate the percentage of each racial/ethnic group that has one or more out-of-school suspensions by dividing the suspended student count by the group enrollment, and then we take the risk difference by subtracting the White student rate from Black student rate (Pearman et al., 2019). Analyses and results for a secondary measure –days suspended—are similar to out-of-school suspensions and available upon request.

**School Covariates**

Extant research shows that school-level characteristics are important predictors of disciplinary practice and student achievement (Skiba et al., 2014). Schools with high concentrations of racially/ethnically-minoritized students and students from socioeconomically disadvantaged backgrounds tend to have lower average test scores and stricter policies against student misconduct and higher rates of discipline (e.g., Curran, 2017; Eitle & Eitle, 2004; Rausch & Skiba, 2004). We therefore include the percentage of students who receive free or reduced-price lunch (%FRPL) and the percentage of White students (%White) as key school covariates in our data.

**Sample**

To construct the dataset for this study, we merge student-level assessment scores from the GRD and school-level discipline and covariates from CRDC and SEDA, all for the 2017-18 school year. Since discipline rates are relatively low in the elementary school grades (Losen & Martinez, 2020), we use data for students in grades 6 to 8 and schools that serve at least one of these grades. From the GRD, we select U.S. public schools that tested at least 10 students during the 2017-18 school year and reported key school covariates (e.g., %FRPL, %White). We further subset the data to Black and White students, as prior research has shown Black-White discipline gaps to be large and persistent even after accounting for school- or district-level factors. This highlights the need to focus on these gaps in relationship to achievement and achievement gains.

We create separate data files by grade and subject to prepare for analyses that examine Black-White gaps in discipline and achievement. To calculate gaps, we need school-level discipline data for both Black and White students. Therefore, schools that have missing discipline data for White students or for Black students are dropped from each data file. In other words, data files for any grade or subject exclude schools that are missing discipline data for either Black or White students.

In total, our sample across grades and subjects includes assessment data in the fall, winter, and spring for 1,308,004 students in grades 6 to 8 in 6,841 schools across the nation. Table 1 shows a comparison of school characteristics between schools in the sample and the population of 39,715 public schools serving any grade between 6 and 8. Compared to the population, sample schools serve a lower percentage of students receiving FRPL (52% vs 57%) and a lower percentage of Hispanic students (19% vs 25%) but a higher percentage of White students (64% vs 56%). Further, sample schools have slightly higher mean enrollment (489 vs 483) and Black student discipline rates (11% vs 10% out of school suspension and 0.53 vs 0.49 days suspended). The distribution of sample and population schools among city, town, suburb, and rural locales is similar, as are rates for White student discipline.

**Analysis**

*Question 1: Do schools with larger Black-White discipline gaps also have larger Black-White achievement gaps?*

We examine the correlations between Black-White disparities in discipline rates and achievement measured by the spring MAP Growth test scores. For this analysis, we only retain schools that had 10 or more students from both groups with non-missing test scores. Pooling grades 6 to 8, we calculate the standardized mean difference between the spring test scores of Black and White students at each school and plot these against the Black-White out-of-school suspension rate gap (in percentage points) in the school. In these figures, we include correlations between the achievement and suspension gaps, as well as the bivariate regression line.

*Question 2: How are school discipline gaps associated with disparities in math and reading learning rates?*

We model student-level growth trajectories across the school year (fall to spring) to understand whether Black-White gaps in learning rates are higher in schools with higher discipline rates. The test score for student *i* in school *j* at timepoint *t* (*t*=0 for fall; t=1 for winter; *t*=2 for spring)ismodeled as a linear function of the months that a student has been in school. To keep consistent with prior research that examined achievement gaps using spring test scores, we reverse code months in school so that the first day of school is approximately -9.5 months and the last day of school is 0. This allows us to interpret the intercept as the test score students would have received on the last day of school, regardless of their actual date of the spring assessment.

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At the student level (level-2), an indicator for whether the student is Black is included to model gaps in both test scores at the end of spring (and learning rates across the school year ().

At level 3 (school), our baseline model (Model 1) only includes random intercepts and random slopes. In three conditional models, we add a set of school characteristics. Model 2 includes the Black-White gap in out-of-school suspension rates (). Model 3 adds the out-of-school suspension rate for White students ). Model 4, shown below, additionally includes the percent of students eligible for FRPL ( and the percentage of White enrollment (%Whitej), both grand-mean centered.

The key parameters are the association between student-level gaps in learning rates and school-level discipline disparities (e.g., . We run these models separately for each grade level and subject. All estimation is done using HLM 8 (Raudenbush et al., 2019). As a secondary analysis, we also examine the number of days suspended rather than suspension rate for Black and White students as the measure of discipline; these results are available upon request.

**Results**

*Question 1: Do schools with larger Black-White discipline gaps also have larger Black-White achievement gaps?*

Mean test scores (in RIT points) by grade and subject for Black and White students are reported in Table 2. Across grades and subjects, Black students scored about 12 RITs below White students, which corresponds to a standardized mean difference of .81 standard deviations in math and .67 standard deviations in reading.

Figure 1 plots the school-level Black-White disparities in out-of-school suspension rates (positive values denote higher Black suspension rates compared to White) and standardized mean differences in achievement measured in spring (positive values denote higher White achievement compared to Black). Correlations between the achievement gaps and suspension gaps are reported at the bottom of the figure and are positive (0.153 for math; 0.191 for reading), indicating that higher rates of suspension for Black students are associated with larger spring achievement gaps favoring White students. Almost all schools are concentrated in the top right quadrant in math and reading, indicating that for most schools, (a) Black suspension rates are higher than White suspension rates and (b) Black achievement is lower than White achievement.

*Question 2: How are school discipline gaps associated with disparities in math and reading learning rates?*

Tables 3-5 present the key parameters from the multilevel models for grades 6, 7, and 8, respectively. Across grades and subjects, Black students have significantly lower spring test scores than White students. In schools where Black students are suspended at higher rates than White students, the Black-White gap in spring test scores is significantly larger. Moving on to interpreting growth patterns, we observe that Black students made significantly lower monthly gains during the school year in math, but similar or slightly higher gains per month in reading compared to their White peers. Further, there was a significant interaction in math between inequalities in growth rates and Black-White discipline disparities in math. That is to say, Black students in schools with large discipline disparities make smaller gains throughout the school year than Black students in schools with no discipline gaps. These results hold even after controlling for White out-of-school suspension rates and other school demographic characteristics (Models 3 and 4).

The relationship between achievement, growth, and disparities in out-of-school suspension rates is illustrated in Figure 2. Specifically, we display the model-implied growth trajectories (using the coefficients from Model 2) for Black and White students attending schools that have (a) no Black-White suspension gap and (b) a 25 percentage-point gap. The estimate for the Gap\*Black\*Months interaction, or the difference in slope (i.e., difference in growth rate) between Black and White students for each additional 10 percentage-points of suspension gap, is presented at the bottom of each graph. In 6th grade math, for example, the estimate is - 0.026 and significant. This means that a 10 percentage-point increase in the Black-White suspension gap is associated with a further 0.026 RIT decrease in the monthly growth rate for Black students. Across both subjects and all three grades, in schools without a Black-White suspension gap (dotted lines), both Black and White students started and ended the school year higher compared to schools with a 25 percentage-point gap (solid lines). In math, Black students in schools with large suspension gaps not only started the school year with lower achievement than White students, but also followed a flatter growth trajectory over the course of the year. This means the achievement gap between Black students and their White counterparts expanded from fall to spring.

**Discussion**

Our results bolster findings from previous studies that suggest a negative association between suspension and achievement gaps. Increasingly, studies have tried to examine the association between the two, often showing that disproportionate suspensions that schools give to Black students are associated with larger achievement gaps (e.g., Pearman et al., 2019). While such studies provide important insights into the relationship between school discipline and achievement, the application of their findings are limited by the context surrounding school discipline and by the availability of data. First, most largescale studies were conducted before states and districts implemented a slew of policy changes to combat disciplinary practices that disproportionately targeted Black students (Steinberg & Lacoe, 2021). Second, few if any studies examined the association between discipline practices and academic growth. Given those limitations of the extant literature, the current study makes several contributions to this growing body of research.

First, we show that, despite the announcement of new policies aimed at reducing unfair practices related to school discipline and race, most schools in the 2017-18 data still suspended Black students at far higher rates than White students. Our results for Black students tend to corroborate those from other studies conducted after the wave of suspension reduction and discipline reforms. For example, Hashim et al. (2018) used Los Angeles Unified School District data and found that, despite overall reductions in suspension rates, large racial/ethnic gaps in discipline rates persist even after these reforms. Davison et al. (2021) similarly reported that an implementation of Restorative Justice in a large district led to a sharp decline in overall suspension rates but no change for Black students. Lacoe and Steinberg (2018) also found, using data from Philadelphia, that reforms resulted in modest declines in suspensions for nonviolent infractions, but serious incidents of student misconduct increased and total suspensions did not decrease. On a broader level, Hwang and colleagues (2022) show that disciplinary disparities across two states have declined since 2005, but that substantial disparities remain between Black and White student exposure to exclusionary discipline. Taken together, these studies suggest that despite widespread policy and programmatic reform efforts that have led to a decline in overall disciplinary rates, racial disparities in exclusionary discipline remain a prevalent component of academic achievement.

Returning to our findings—for Black students, attending a school that disciplined Black students at higher rates was associated with attending a school with a larger achievement gap favoring White students. For example, math achievement gaps and suspension gaps were correlated approximately .15 in our data. By contrast, Shores et al. (2020) found that the correlation between test score gaps and suspension gaps was .18 for single suspension and .11 for multiple suspensions, and Pearman et al. (2018) reported a correlation of .25, pooling math and English Language Arts scores. Thus, our study provides an updated picture of these disparities by finding similar disparities despite drawing on more recent data that captured these disparities during reform efforts. While the associations between discipline and achievement are disconcerting, we note that implementation of school disciplinary reforms may take three to five years and changes in student outcomes may change over time and take years to materialize (Davison et al., 2021; Darling-Hammond et al., 2020). This reality points to the need for additional policy efforts to address inequity related to school discipline and suggests that the impact of such efforts should be continually reexamined over-time.

Perhaps more importantly, Black students in schools with higher Black suspension rates also grew substantially less in math between fall and spring. Meaning, Black-White achievement gaps expanded more during the school year in schools with differential rates of suspension. However, the results differ by subject as the association between growth and discipline in reading was not statistically significant. These growth estimates are useful for providing a deeper and more nuanced understanding of the relationship between suspension and achievement gaps. Primarily, growth tends to be less strongly associated with socioeconomic status than static achievement. Thus, even when accounting for a student’s achievement level at the beginning of the year, there is still a strong association between discipline gaps and spring achievement gaps.

Although our findings are not causal, they support the theory that suspensions may impede academic growth by preventing students from accessing academic content while they are out of school. In the context of the school-to-prison nexus, our results also suggest that environments with stark disciplinary disparities are also not optimal learning environments for Black students. While we do not observe long-term or out-of-school outcomes in this study, our findings are noteworthy considering other studies that link school discipline and achievement gaps with negative outcomes such as increased juvenile justice contact and lower rates of postsecondary enrollment, graduation, and earnings (Davison et al., 2022; Perry & Morris, 2014; Reardon, 2019). Further, our results indicate that mathematic achievement gaps widen across the *entire school* when discipline disparities are high. This highlights that school disciplinary disparities have both system-wide and individual impact. Thus, punitive and racially disparate school environments may contribute to deleterious outcomes even amongst students who are not experiencing exclusionary discipline themselves.

Our results should also inform future policy efforts in this area. Particularly, we show that, despite a range of policies being implemented to address the prevalence of and racial disparities in student discipline, gaps in suspension rates remained quite high for Black students. Thus, it is possible that the effects of such policies have not yet had time to fully materialize or that additional efforts to reduce those racial disparities in student discipline may be warranted. Further, we show that math achievement gaps in schools with asymmetric disciplinary outcomes are wider and worsen rather than improve *during the school year*. While prior research has also found that Black-White gaps increase during the school year (Kuhfeld et al., 2021; Quinn et al., 2016; von Hippel et al., 2018), the various school factors that explained this phenomenon were uncertain. Our results suggest that school discipline disparities are a key facet of the Black-White within-year learning gaps. Policymakers may therefore want to conduct further studies to understand how school contextual factors contribute to widening achievement gaps. They may also wish to implement interventions and study related outcomes, both to understand what approaches may narrow achievement gaps during the school year, and to help identify the causal direction between discipline practices and academic growth.

**Limitations**

Several limitations of our study bear mention. First, our results are not causal, only descriptive. However, by examining growth, we use a metric less strongly associated with factors like student poverty than static achievement. Relatedly, given the descriptive nature of our data, we cannot examine whether reforms implemented around 2015 affected the relationship between discipline and achievement gaps. (In fact, we do not have good data on the implementation of such reforms across districts and states.) Thus, while we were able to update results from studies like Shores et al. (2020), we are not in a position to understand why there might be differences between our results and theirs, which used earlier data.

Second, our sample is very large but not nationally representative. Thus, we cannot say if results accurately characterize the nation as a whole. Third, our data do not include student-level measures of socioeconomic status; therefore, we were unable to control for this important factor in our analyses. Relatedly, our data only included a few school covariates (e.g., % FRPL, % White) and did not allow us to study aspects of school context that prior research has found to be associated with discipline outcomes, such as teacher perception, principal decision-making, and school- and district-level policies. This paper focused on disparities between Black and White students. Future research should extend analyses to other minoritized groups, such as Hispanic, Asian, and Native American students. Finally, we only had access to achievement as an outcome. Other studies (e.g., Umeh et al., 2020) looked at impact of suspension on outcomes such as participation in extracurricular activities and community service. We were not able to replicate such studies.

The results of our study also point to the need for further research on school discipline and achievement gaps. While it is clear that there is a negative association between school discipline and achievement gaps, the lack of causal inference makes the policy prescriptions slightly unclear. Understanding the causal mechanisms that drive racial disparities in student discipline will assist schools and policymakers in their efforts to address such problems. Further, understanding the causal linkages between student suspensions and academic growth will help schools redesign school disciplinary procedures in a way that may mitigate this relationship. While many studies of behavioral interventions like restorative justice have suggested mixed but mostly positive impacts on student outcomes, such interventions are not specifically designed to target academic growth (Davison et al., 2021; Noltemeyer et al., 2019). Thus, future research that examines the mechanisms that drive these disparities and the nuances of disciplinary interventions will be useful in improving the efficacy and effectiveness of school discipline interventions.

**Notes**

1 NWEA, previously Northwest Evaluation Association, is a not-for-profit organization that partners with educational agencies across the country to assess and monitor student academic achievement and growth. NWEA is the current name of the organization and no longer an acronym.

2 MAP Growth is the name of the assessment used in this study. MAP is not an acronym.

3 This study used de-identified test scores data, and human subjects requirements for Internal Review Board were waived.

**Acknowledgements**

The authors are grateful for helpful feedback from Nate Jensen, Andrew McEachin, the anonymous reviewers, and conference participants at the Society for Research on Educational Effectiveness and the Association for Public Policy Analysis and Management.

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Table 1

*Description of the Schools in the Sample Relative to the Population of U.S. Public Schools Serving Grades 6 to 8*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Math | | |  | Reading | | |  | All Public Schools |
|  | Grade 6 | Grade 7 | Grade 8 |  | Grade 6 | Grade 7 | Grade 8 |  |
| N schools | 5,071 | 3,929 | 3,828 |  | 4,908 | 3,796 | 3,686 |  | 39,715 |
|  |  |  |  |  |  |  |  |  |  |
| Free or reduced-price lunch | 0.52 | 0.51 | 0.51 |  | 0.52 | 0.51 | 0.51 |  | 0.57 |
| White | 0.63 | 0.64 | 0.64 |  | 0.63 | 0.64 | 0.63 |  | 0.56 |
| Hispanic | 0.19 | 0.18 | 0.18 |  | 0.19 | 0.18 | 0.18 |  | 0.25 |
| Black | 0.13 | 0.14 | 0.14 |  | 0.13 | 0.14 | 0.14 |  | 0.13 |
| City | 0.24 | 0.22 | 0.22 |  | 0.24 | 0.22 | 0.22 |  | 0.23 |
| Rural | 0.35 | 0.38 | 0.38 |  | 0.34 | 0.36 | 0.37 |  | 0.35 |
| Suburb | 0.29 | 0.28 | 0.27 |  | 0.29 | 0.28 | 0.27 |  | 0.30 |
| Town | 0.12 | 0.13 | 0.13 |  | 0.12 | 0.14 | 0.14 |  | 0.12 |
| Average enrollment | 496 | 520 | 520 |  | 498 | 528 | 528 |  | 483 |
| White % in-school suspension (ISS) | 0.05 | 0.06 | 0.07 |  | 0.05 | 0.07 | 0.07 |  | 0.05 |
| White % out-of-school suspension (OSS) | 0.05 | 0.06 | 0.06 |  | 0.05 | 0.06 | 0.06 |  | 0.05 |
| White number of days suspended | 0.21 | 0.27 | 0.27 |  | 0.21 | 0.27 | 0.28 |  | 0.21 |
| Black % in-school suspension (ISS) | 0.11 | 0.14 | 0.14 |  | 0.11 | 0.14 | 0.14 |  | 0.10 |
| Black % out-of-school suspension (OSS) | 0.11 | 0.14 | 0.14 |  | 0.11 | 0.14 | 0.14 |  | 0.10 |
| Black number of days suspended | 0.51 | 0.66 | 0.67 |  | 0.51 | 0.67 | 0.68 |  | 0.49 |
| Notes: With the exception of enrollment, data are school-level proportions (e.g., 0.52 = 52%). | | | | | | | | | |

Table 2

*Means, Standard Deviations, and Sample Size by Race/ethnicity, Grade, Subject, and Term*

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | White Students | | |  | Black Students | | |  | Std. Mean Difference (SDs) |
| Grade | Subject | Term | Mean RIT | Std. Dev. | N |  | Mean RIT | Std. Dev. | N |  |
| 6 | Math | Fall | 218.67 | 14.68 | 331057 |  | 206.83 | 15.13 | 88775 |  | -0.80 |
| 6 | Math | Winter | 222.68 | 15.11 | 272081 |  | 210.06 | 15.42 | 78047 |  | -0.83 |
| 6 | Math | Spring | 227.15 | 16.09 | 325838 |  | 213.50 | 16.69 | 86309 |  | -0.84 |
| 7 | Math | Fall | 225.76 | 16.14 | 311416 |  | 212.61 | 16.54 | 81771 |  | -0.81 |
| 7 | Math | Winter | 228.76 | 16.57 | 248621 |  | 215.30 | 16.75 | 71429 |  | -0.81 |
| 7 | Math | Spring | 232.58 | 17.29 | 311545 |  | 218.48 | 17.73 | 79854 |  | -0.81 |
| 8 | Math | Fall | 231.58 | 17.20 | 303178 |  | 217.23 | 17.60 | 79930 |  | -0.83 |
| 8 | Math | Winter | 234.06 | 17.58 | 239822 |  | 219.83 | 17.64 | 69853 |  | -0.81 |
| 8 | Math | Spring | 237.23 | 18.64 | 293377 |  | 222.18 | 18.42 | 76168 |  | -0.81 |
| 6 | Reading | Fall | 212.53 | 15.89 | 255063 |  | 202.46 | 16.60 | 75531 |  | -0.63 |
| 6 | Reading | Winter | 216.03 | 15.09 | 226948 |  | 205.58 | 16.10 | 70091 |  | -0.68 |
| 6 | Reading | Spring | 218.12 | 15.16 | 228729 |  | 207.77 | 16.27 | 70589 |  | -0.67 |
| 7 | Reading | Fall | 217.40 | 16.08 | 236197 |  | 206.83 | 16.94 | 67989 |  | -0.65 |
| 7 | Reading | Winter | 219.94 | 15.45 | 204763 |  | 209.36 | 16.45 | 62785 |  | -0.67 |
| 7 | Reading | Spring | 221.80 | 15.55 | 220025 |  | 211.50 | 16.47 | 64447 |  | -0.65 |
| 8 | Reading | Fall | 221.66 | 16.24 | 233954 |  | 210.35 | 17.14 | 65424 |  | -0.69 |
| 8 | Reading | Winter | 223.83 | 15.42 | 202861 |  | 213.12 | 16.41 | 60831 |  | -0.68 |
| 8 | Reading | Spring | 225.34 | 15.73 | 209470 |  | 214.73 | 16.53 | 60705 |  | -0.67 |

Table 3

*Achievement and Learning Rates Predicted by Black-White Out-of-school Suspension (OSS) Gaps in Grade 6*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Math | | | |  | Reading | | | |
|  | (1) | (2) | (3) | (4) |  | (1) | (2) | (3) | (4) |
| Intercept (Spring Score) | 226.286\*\*\* | 226.519\*\*\* | 229.019\*\*\* | 227.201\*\*\* |  | 217.869\*\*\* | 218.053\*\*\* | 220.168\*\*\* | 218.756\*\*\* |
|  | (0.123) | (0.136) | (0.155) | (0.144) |  | (0.104) | (0.115) | (0.132) | (0.138) |
| Black-White OSS Gap |  | -0.424\*\*\* | -0.179\*\* | 0.132\*\* |  |  | -0.337\*\*\* | -0.100 | 0.110\* |
|  |  | (0.088) | (0.082) | (0.065) |  |  | (0.073) | (0.069) | (0.058) |
| White OSS |  |  | -4.982\*\*\* | -2.309\*\*\* |  |  |  | -4.242\*\*\* | -2.158\*\*\* |
|  |  |  | (0.238) | (0.180) |  |  |  | (0.210) | (0.182) |
| Black | -10.204\*\*\* | -9.273\*\*\* | -9.970\*\*\* | -8.910\*\*\* |  | -7.570\*\*\* | -6.627\*\*\* | -7.205\*\*\* | -6.338\*\*\* |
|  | (0.121) | (0.155) | (0.177) | (0.183) |  | (0.116) | (0.149) | (0.171) | (0.184) |
| BW Gap X Black |  | -1.075\*\*\* | -1.585\*\*\* | -1.486\*\*\* |  |  | -1.095\*\*\* | -1.604\*\*\* | -1.441\*\*\* |
|  |  | (0.117) | (0.114) | (0.108) |  |  | (0.113) | (0.113) | (0.108) |
| White OSS X Black |  |  | 2.154\*\*\* | 0.930\*\*\* |  |  |  | 1.927\*\*\* | 0.995\*\*\* |
|  |  |  | (0.177) | (0.164) |  |  |  | (0.175) | (0.177) |
| Months | 1.083\*\*\* | 1.093\*\*\* | 1.125\*\*\* | 1.118\*\*\* |  | 0.659\*\*\* | 0.664\*\*\* | 0.658\*\*\* | 0.669\*\*\* |
|  | (0.005) | (0.006) | (0.007) | (0.009) |  | (0.006) | (0.007) | (0.008) | (0.010) |
| BW Gap X Months |  | -0.016\*\*\* | -0.014\*\*\* | -0.012\*\*\* |  |  | -0.008 | -0.009\* | -0.010\* |
|  |  | (0.004) | (0.004) | (0.004) |  |  | (0.005) | (0.005) | (0.005) |
| White OSS X Months |  |  | -0.062\*\*\* | -0.051\*\*\* |  |  |  | 0.014 | -0.009 |
|  |  |  | (0.010) | (0.012) |  |  |  | (0.011) | (0.013) |
| Black X Months | -0.142\*\*\* | -0.120\*\*\* | -0.118\*\*\* | -0.110\*\*\* |  | 0.013 | 0.024\*\* | 0.022\* | 0.027\* |
|  | (0.006) | (0.008) | (0.010) | (0.011) |  | (0.008) | (0.011) | (0.013) | (0.014) |
| BW Gap X Black X Months |  | -0.026\*\*\* | -0.031\*\*\* | -0.033\*\*\* |  |  | -0.011 | -0.008 | -0.013 |
|  |  | (0.006) | (0.006) | (0.006) |  |  | (0.008) | (0.008) | (0.008) |
| White OSS X Black X Months |  |  | 0.010 | 0.009 |  |  |  | -0.003 | 0.008 |
|  |  |  | (0.009) | (0.010) |  |  |  | (0.011) | (0.014) |
|  |  |  |  |  |  |  |  |  |  |
| White Intercept SD (L2) | 14.42 | 14.42 | 14.42 | 14.43 |  | 12.81 | 12.81 | 12.81 | 12.81 |
| Months Slope SD (L2) | 0.35 | 0.35 | 0.35 | 0.35 |  | 0.33 | 0.33 | 0.33 | 0.33 |
| White Intercept SD (L3) | 7.92 | 7.92 | 6.93 | 5.58 |  | 6.40 | 6.40 | 5.57 | 4.64 |
| BW Gap SD (L3) | 4.65 | 4.49 | 4.24 | 4.15 |  | 4.11 | 3.89 | 3.69 | 3.71 |
| Months Slope SD (L3) | 0.32 | 0.32 | 0.31 | 0.31 |  | 0.32 | 0.32 | 0.32 | 0.31 |
| Months x BW Gap SD (L3) | 0.16 | 0.16 | 0.16 | 0.16 |  | 0.15 | 0.15 | 0.15 | 0.16 |
| Notes: BW = Black-White. SD = standard deviation. L2 = level 2. | | | | | | | | | |

Table 4

*Achievement and Learning Rates Predicted by Black-White Out-of-school Suspension (OSS) Gaps in Grade 7*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Math | | | |  | Reading | | | |
|  | (1) | (2) | (3) | (4) |  | (1) | (2) | (3) | (4) |
| Intercept (Spring Score) | 230.855\*\*\* | 231.070\*\*\* | 234.167\*\*\* | 232.153\*\*\* |  | 220.902\*\*\* | 221.088\*\*\* | 223.495\*\*\* | 222.204\*\*\* |
|  | (0.144) | (0.165) | (0.193) | (0.183) |  | (0.118) | (0.136) | (0.156) | (0.168) |
| Black-White OSS Gap |  | -0.326\*\*\* | -0.154\* | 0.131\* |  |  | -0.277\*\*\* | -0.139\* | 0.036 |
|  |  | (0.095) | (0.083) | (0.068) |  |  | (0.083) | (0.073) | (0.064) |
| White OSS |  |  | -4.861\*\*\* | -2.346\*\*\* |  |  |  | -3.788\*\*\* | -2.125\*\*\* |
|  |  |  | (0.242) | (0.197) |  |  |  | (0.207) | (0.199) |
| Black | -10.629\*\*\* | -9.611\*\*\* | -10.613\*\*\* | -9.523\*\*\* |  | -7.813\*\*\* | -6.834\*\*\* | -7.439\*\*\* | -6.808\*\*\* |
|  | (0.134) | (0.170) | (0.207) | (0.224) |  | (0.123) | (0.159) | (0.192) | (0.214) |
| BW Gap X Black |  | -1.033\*\*\* | -1.497\*\*\* | -1.426\*\*\* |  |  | -0.996\*\*\* | -1.411\*\*\* | -1.305\*\*\* |
|  |  | (0.120) | (0.121) | (0.121) |  |  | (0.111) | (0.116) | (0.117) |
| White OSS X Black |  |  | 2.214\*\*\* | 0.999\*\*\* |  |  |  | 1.623\*\*\* | 0.866\*\*\* |
|  |  |  | (0.186) | (0.186) |  |  |  | (0.168) | (0.184) |
| Months | 0.860\*\*\* | 0.864\*\*\* | 0.884\*\*\* | 0.878\*\*\* |  | 0.523\*\*\* | 0.529\*\*\* | 0.503\*\*\* | 0.527\*\*\* |
|  | (0.006) | (0.006) | (0.008) | (0.009) |  | (0.007) | (0.008) | (0.009) | (0.012) |
| BW Gap X Months |  | -0.006\* | -0.006 | -0.004 |  |  | -0.008 | -0.011\*\* | -0.013\*\* |
|  |  | (0.004) | (0.004) | (0.004) |  |  | (0.005) | (0.005) | (0.005) |
| White OSS X Months |  |  | -0.031\*\*\* | -0.024\*\* |  |  |  | 0.042\*\*\* | 0.010 |
|  |  |  | (0.009) | (0.011) |  |  |  | (0.011) | (0.014) |
| Black X Months | -0.099\*\*\* | -0.076\*\*\* | -0.083\*\*\* | -0.076\*\*\* |  | 0.007 | 0.022\* | 0.020 | 0.014 |
|  | (0.006) | (0.009) | (0.010) | (0.012) |  | (0.009) | (0.012) | (0.015) | (0.016) |
| BW Gap X Black X Months |  | -0.023\*\*\* | -0.024\*\*\* | -0.024\*\*\* |  |  | -0.015\* | -0.005 | -0.011 |
|  |  | (0.006) | (0.007) | (0.007) |  |  | (0.008) | (0.008) | (0.008) |
| White OSS X Black X Months |  |  | 0.011 | 0.012 |  |  |  | -0.013 | -0.002 |
|  |  |  | (0.009) | (0.010) |  |  |  | (0.011) | (0.014) |
|  |  |  |  |  |  |  |  |  |  |
| White Intercept SD (L2) | 15.55 | 15.55 | 15.55 | 15.55 |  | 13.19 | 13.19 | 13.20 | 13.20 |
| Months Slope SD (L2) | 0.33 | 0.33 | 0.33 | 0.33 |  | 0.29 | 0.29 | 0.29 | 0.29 |
| White Intercept SD (L3) | 8.19 | 8.20 | 7.06 | 5.71 |  | 6.44 | 6.44 | 5.55 | 4.71 |
| BW Gap SD (L3) | 4.74 | 4.60 | 4.30 | 4.23 |  | 4.01 | 3.84 | 3.69 | 3.69 |
| Months Slope SD (L3) | 0.29 | 0.29 | 0.29 | 0.29 |  | 0.31 | 0.31 | 0.31 | 0.31 |
| Months x BW Gap SD (L3) | 0.13 | 0.13 | 0.13 | 0.13 |  | 0.18 | 0.18 | 0.18 | 0.18 |
| Notes: BW = Black-White. SD = standard deviation. L2 = level 2. | | | | | | | | | |

Table 5

*Achievement and Learning Rates Predicted by Black-White Out-of-school Suspension (OSS) Gaps in Grade 8*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Math | | | |  | Reading | | | |
|  | (1) | (2) | (3) | (4) |  | (1) | (2) | (3) | (4) |
| Intercept (Spring Score) | 235.285\*\*\* | 235.527\*\*\* | 238.860\*\*\* | 236.771\*\*\* |  | 224.378\*\*\* | 224.500\*\*\* | 226.909\*\*\* | 225.709\*\*\* |
|  | (0.155) | (0.178) | (0.202) | (0.188) |  | (0.120) | (0.138) | (0.154) | (0.161) |
| Black-White OSS Gap |  | -0.364\*\*\* | -0.189\*\* | 0.122\* |  |  | -0.193\*\* | -0.062 | 0.116\* |
|  |  | (0.098) | (0.085) | (0.070) |  |  | (0.081) | (0.069) | (0.061) |
| White OSS |  |  | -5.156\*\*\* | -2.616\*\*\* |  |  |  | -3.756\*\*\* | -2.213\*\*\* |
|  |  |  | (0.229) | (0.185) |  |  |  | (0.183) | (0.167) |
| Black | -11.363\*\*\* | -10.206\*\*\* | -11.416\*\*\* | -10.225\*\*\* |  | -7.920\*\*\* | -6.814\*\*\* | -7.472\*\*\* | -6.799\*\*\* |
|  | (0.144) | (0.188) | (0.223) | (0.236) |  | (0.127) | (0.175) | (0.206) | (0.225) |
| BW Gap X Black |  | -1.171\*\*\* | -1.639\*\*\* | -1.584\*\*\* |  |  | -1.151\*\*\* | -1.548\*\*\* | -1.447\*\*\* |
|  |  | (0.133) | (0.133) | (0.133) |  |  | (0.132) | (0.133) | (0.134) |
| White OSS X Black |  |  | 2.495\*\*\* | 1.202\*\*\* |  |  |  | 1.644\*\*\* | 0.949\*\*\* |
|  |  |  | (0.181) | (0.174) |  |  |  | (0.156) | (0.167) |
| Months | 0.718\*\*\* | 0.718\*\*\* | 0.748\*\*\* | 0.747\*\*\* |  | 0.459\*\*\* | 0.455\*\*\* | 0.434\*\*\* | 0.466\*\*\* |
|  | (0.006) | (0.007) | (0.008) | (0.011) |  | (0.007) | (0.008) | (0.009) | (0.012) |
| BW Gap X Months |  | -0.001 | 0.001 | 0.002 |  |  | 0.005 | 0.004 | 0.000 |
|  |  | (0.004) | (0.004) | (0.004) |  |  | (0.005) | (0.005) | (0.005) |
| White OSS X Months |  |  | -0.047\*\*\* | -0.047\*\*\* |  |  |  | 0.032\*\*\* | -0.008 |
|  |  |  | (0.010) | (0.012) |  |  |  | (0.012) | (0.014) |
| Black X Months | -0.096\*\*\* | -0.076\*\*\* | -0.112\*\*\* | -0.112\*\*\* |  | 0.024\*\*\* | 0.040\*\*\* | 0.020 | 0.016 |
|  | (0.007) | (0.009) | (0.011) | (0.012) |  | (0.009) | (0.013) | (0.015) | (0.018) |
| BW Gap X Black X Months |  | -0.020\*\*\* | -0.021\*\*\* | -0.024\*\*\* |  |  | -0.016 | -0.007 | -0.016 |
|  |  | (0.007) | (0.007) | (0.007) |  |  | (0.010) | (0.010) | (0.011) |
| White OSS X Black X Months |  |  | 0.049\*\*\* | 0.044\*\*\* |  |  |  | 0.007 | 0.019 |
|  |  |  | (0.009) | (0.011) |  |  |  | (0.012) | (0.014) |
|  |  |  |  |  |  |  |  |  |  |
| White Intercept SD (L2) | 16.64 | 16.64 | 16.65 | 16.65 |  | 13.23 | 13.23 | 13.23 | 13.23 |
| Months Slope SD (L2) | 0.35 | 0.35 | 0.35 | 0.35 |  | 0.26 | 0.26 | 0.26 | 0.26 |
| White Intercept SD (L3) | 8.75 | 8.77 | 7.54 | 6.22 |  | 6.45 | 6.47 | 5.61 | 4.87 |
| BW Gap SD (L3) | 5.08 | 4.93 | 4.58 | 4.47 |  | 4.11 | 3.89 | 3.72 | 3.73 |
| Months Slope SD (L3) | 0.30 | 0.30 | 0.30 | 0.30 |  | 0.31 | 0.31 | 0.31 | 0.30 |
| Months x BW Gap SD (L3) | 0.14 | 0.14 | 0.14 | 0.14 |  | 0.17 | 0.17 | 0.17 | 0.17 |
| Notes: BW = Black-White. SD = standard deviation. L2 = level 2. | | | | | | | | | |

 

Figure 1. *Scatterplot of schools’ White-Black achievement gaps by Black-White gaps in out-of-school suspension rates.*

1. Grade 6



1. Grade 7



1. Grade 8



Figure 2. *Within-year growth trajectories for White and Black students conditional on school-level disparities in out-of-school suspension rates.*