



## RESEARCH MEMO

# Elementary School Positive Behavior Reports and Middle School Success

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### Suggested Citation:

Pyne, J. & McCready, B. (2019). Elementary School Positive Behavior Reports and Middle School Success. Madison, WI: Madison Education Partnership. pp. 1-21.

## Executive Summary

Starting at school entry, the way students act in school, and how others respond to those actions, shapes their relationship to learning. In this memo, we document teacher-reported patterns of students' *constructive school behaviors* – or those behaviors identified by teachers and administrators as aiding learning and socioemotional growth in school. We trace such behavior reports in elementary school and describe how those patterns relate to academic, behavioral and socioemotional success in middle school. Using teacher reports of students' constructive elementary school behaviors in district report card data (K-3), we classify students into four broad types. These groups include those who teachers see as:

- **Consistently developed**, with perfect or just one or two less-than-perfect teacher-reported constructive behavior item ratings in kindergarten through third grade,
- **Consistently underdeveloped**, with three or more less-than-perfect constructive behavior item ratings in kindergarten that remain so through third grade,
- **Developing**, with three or more less-than-perfect constructive behavior item ratings in kindergarten that improve by third grade, and
- **Declining**, perfect or just one or two less-than-perfect teacher-reported constructive behavior item ratings in kindergarten that drop by third grade.

For the purposes of this memo, we focus mostly on students who have *consistently developed* and *consistently underdeveloped* constructive behavior report trajectories in kindergarten through third grade, but briefly discuss the potential importance of considering *developing* and *declining* categories as well. We then link those categories to students' academic, behavioral and disciplinary outcomes when in seventh grade. Finally, we test the predictive power of using reports of early constructive behaviors to determine the degree of inequality among students in seventh grade by comparing achievement, discipline, and behavior disparities when differentiating students by constructive behavior group type, race, or family income. We ask:

1. How are patterns of constructive elementary school behavior reports distributed along racial, socioeconomic and gender lines?
2. How large are achievement, behavior, and discipline disparities in middle school between students with reports of consistently developed and consistently underdeveloped elementary school behaviors?
3. How do early elementary school behavior differences enhance understandings of differences by race and family income?

We have two main sets of findings:

- A. **Reports of constructive school behavior patterns in elementary school are unevenly distributed by race, socioeconomic background, and gender.** Disadvantaged and historically underserved students are less likely to have reports showing consistently developed constructive school behaviors across early elementary grades and are overrepresented among those with reports of consistently underdeveloped constructive school behaviors.
- B. **Patterns of constructive elementary school behavior reports differentiate students on academic, behavioral and disciplinary outcomes, complicating our understanding of achievement and discipline differences based on race/ethnicity or socioeconomic background.** Achievement and discipline differences between those with consistently developed and consistently underdeveloped constructive behavior reports are larger than Latinx-white and family income differences and are on par with black-white achievement differences. Teacher-reported constructive school behavior categories reveal the largest

differences in school attendance than any of the demographic indicators presented. Additionally, when differentiating patterns of teacher-reported behaviors by race or family income, some achievement and discipline differences nearly double, accentuating concerns around racial equity in the district.

## Child Behaviors and Skills in School

Many school districts track constructive school behaviors – those behaviors that aid learning and socialization - by way of teacher-reported observations or numerical rankings, documented in report cards sent home to parents or guardians. In Madison Metropolitan School District, teachers have historically evaluated such behaviors – documented as numerical “child as learner” items in report cards – in much the same way that they document grades in academic domains such as language arts and math. The research arm of the Department of Education funds the Early Childhood Longitudinal Study – Kindergarten cohort (ECLS-K), which tracks thousands of children nationally through elementary school and collects a range of teacher-reported socioemotional indicators similar to but more numerous than those previously collected by Madison Metropolitan School District. The availability of these kinds of measures has allowed policymakers, practitioners and researchers to regularly track early constructive school behavior reports and their impacts on students for many years.

## Our Research Questions

Taking advantage of longitudinal data in Madison Metropolitan School District that track over multiple years teacher’s reports of constructive behaviors corresponding to a variety of socioemotional skills, we ask three questions:

First, we ask: *how are patterns of constructive elementary school behavior reports distributed along racial, socioeconomic, and gender lines?* There is variation in children’s readiness for the social and cultural expectations of formal schooling (e.g., 1, 2, 3). Adults in school can interpret, then sanction or reward, the behaviors of students differently across racial and class lines (4, 5). Although we cannot determine the degree to which student- or teacher-driven processes generate the behavior reports under study, both loci (student actions or teacher perceptions) tell us crucial information about how a student might relate to and feel about school later on. As a matter of equity, this first research question will help us understand the extent to which early constructive behavior reports differ across groups.

We then ask, *are there achievement, behavior, and discipline differences in middle school between students with reports of consistently developed and consistently underdeveloped elementary school behaviors and if so, how do teacher reports of early elementary school behavior differences enhance our understanding of differences by race and family income?* Racial and socioeconomic disparities in school achievement and discipline are sources for some of the greatest equity concerns about K-12 schools nationally (see 6, 7, 8). The Madison Metropolitan School District is no different in this regard. The district has some of the largest racial and socioeconomic disparities in the country.<sup>1</sup> Differences in teacher-reported early school behavior patterns may or may not map closely on to those measured by racial or socioeconomic indicators. If these longitudinal reports of school behaviors reveal unique

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<sup>1</sup> Racial achievement gaps reported publicly by NAEP, at <https://www.nationsreportcard.gov>. Socioeconomic gaps informally reported by Stanford’s Center for Education Policy Analysis using estimates from the Stanford Education Data Archive.

distinctions among students, the usefulness of the measures might be great for equity purposes, particularly when conditioning demographic indicators like race and family income on reports of early constructive behavior patterns.

## The Data

Data come from Madison Metropolitan School District administrative records, which contain measures of teachers' assessments of students' constructive school behaviors in elementary school, followed by student achievement, behavior, disciplinary involvement, and feelings of belonging in seventh grade. Historical tracking of students' constructive elementary school behavior reports limits the number of cohorts to those students who were in seventh grade in the 2016-17 and 2017-18 school years. We necessarily exclude students for which there is no elementary school report card information. This removes 2% of students we observe in fifth, sixth, and seventh grade administrative records, resulting in an analytic sample of 3,742 students with records of constructive elementary school behavior reports, behavior referrals, and absences in fifth through seventh grades. Due to sample attrition based on MAP testing, we define a separate sample of 2,759 students with complete elementary and middle school test score records in grades five through seven. Sample attrition shows that full and test score samples are largely proportional by race, gender, and free/reduced-price lunch participation (Appendix A).

### Measures

*Constructive elementary school behavior reports.* Constructive elementary school behavior measures come from teacher assessments of the productive and useful aspects of students' in-school behaviors. There is some concern in the literature about using teacher reports of student behaviors because white teachers might bias their reports of historically underserved students more than they do of other students' behaviors. However, there is inconsistent evidence that positive student behavior ratings are related to discrimination (9). Luo and colleagues (10) suggest teacher reports of students' attentiveness, rule- and direction-following, interactions, and classroom initiative are valid measures of young students' behavioral engagement, and are consistent with parent and student reports of the same constructs. Pigott and Cowen (11) find that ratings of black elementary school students are similar between black and white teachers, in that both are more negative about their ratings of black students than white students. One exception appears to be in the U.S. South, where teachers rate students who are not a part of their racial/ethnic group more negatively (Dee 2005).

Even so, we do not rule out the possibility of bias in teacher reporting of early elementary school behaviors but believe that bias in reporting would need to be systematic across teachers or different across grade levels to affect our interpretations of trajectories. The 13 items include teacher responses to whether they believe students either rarely, sometimes, or mostly exhibit behaviors such as: accepting responsibility for behaviors, completing assignments on time, demonstrating self-control, and working independently. All items load onto a single behavioral factor; see Appendix A for the full list of items.

*Early adolescent achievement, attendance, and disciplinary involvement.* Academic achievement measures come from spring administrations of the Measures of Academic Progress (MAP) mathematics and reading subtests, given to students in fifth through seventh

grade. School attendance and disciplinary involvement in late elementary and early middle school come from district administrative records of students' total absences and office disciplinary referrals (ODRs) for each school year, respectively. We obtain these records for each students' seventh grade school year.

## Research Design

To begin, we differentiate teacher reports of students' constructive school behaviors by creating an initial cutoff score at kindergarten entry. Teachers tend to rate students highly on these three-point scales. Nearly 41 percent of kindergartners in the sample have the highest possible score of three on all thirteen items. Another 12% have the highest score on 12 of 13 items and another 10% have the highest score on 11 of 13 items. We define a child as "consistently high" if teachers rate the student as having the highest possible score on at least eleven out of thirteen report card items in kindergarten and third grade. This means we acknowledge "consistently developed" students might not have completely perfect ratings from term to term due to different standards among teachers or shifting circumstances of students and their families from year to year. If a child has less than the highest score on ten or fewer items from their teacher in kindergarten and third grade – meaning they consistently received relatively low "1" or "2" ratings on at least three items each year - we label them as having "consistently underdeveloped" reports of behavior meaning we believe that having much less than a perfect score on these items signals that the student faces notable challenges in the classroom due to the teacher's ratings of their constructive behaviors.

In preliminary analyses we found that racial and socioeconomic disparities are highest between those with consistently developed and underdeveloped constructive school behavior reports. Thus, we focus mainly on students in these two groups for this report. However, we discuss descriptive statistics for all groups, including those with initially developed teacher ratings that decline ("declining") and those with initially underdeveloped but increasing teacher ratings ("developing"). We evaluate observed seventh-grade achievement, attendance, and discipline gaps between those who had consistently developed and underdeveloped constructive elementary school behavior reports, alongside differences by race, ethnicity and family income. For achievement differences, we average MAP test scores within each group we study. Due to skewed distributions of absences and office disciplinary referrals, we take the median value of absences and the median value of ODRs, given any ODRs.

By including academic, behavioral and discipline differences by race and family income, we do not suggest reports of early constructive behavior patterns can or should replace concerns about racial or income disparities. Rather, we want to understand how well early constructive behavior report groupings can enhance our understanding of those differences for greater understanding of racial and economic equity concerns. Thus, in our final set of analyses we explore how well reports of constructive behavior trajectories identify educational inequalities when *combined* with indicators of race and family income. We do so by comparing the academic and behavioral seventh-grade outcomes of those with consistently developed and underdeveloped constructive school behavior reports by family-reported race/ethnicity and free/reduced-price lunch participation.

## Results

### **How are patterns of constructive elementary school behavior reports distributed along racial, socioeconomic, and gender lines?**

Figure 1 shows patterns of constructive elementary school behavior reports for each group of students from the beginning of kindergarten through the end of grade three. Those with consistently developed or declining constructive behavior reports have identical reported behaviors near school entry at the mean, but while the former maintain constructive behavior report levels over time the latter have positive reports that tend to decline over time. Those with developing or consistently underdeveloped constructive school behavior reports typically have similarly-reported behaviors at kindergarten entry as well, but the latter's does not improve over time and the former's behavior reports are nearly the level of those with reports of consistently developed constructive school behaviors by the end of third grade.

Among all students we study, 46% are white, 14% African American, 21% Latinx and 8% Asian (Figure 2). About half are female and 44% participate in the district's free and reduced-price lunch program (Table 1). Fifteen percent have a special education designation. About 36% of students in the sample have consistently developed reports of constructive school behaviors, 31% are developing, 18% are declining, and 15% are reported as consistently underdeveloped behaviorally. Among those with consistently developed constructive school behavior reports, white students are highly overrepresented (59% vs. 46% of students overall) and African American students are greatly underrepresented (4% vs 14% overall). Girls are highly overrepresented as well (61% vs. 49% overall), while low-income and special education students are greatly underrepresented. Among those with developing constructive school behavior reports, low-income students are overrepresented, but students are evenly represented by race and gender. Among those with declining constructive behavior reports in elementary school, students are very evenly represented based on any of the demographic factors measured. Finally, among those whose teachers regularly report underdeveloped constructive school behaviors for them across early grades, white and Asian students are underrepresented while African American and low-income students are highly overrepresented.

### **How large are achievement, behavior, and discipline differences in middle school between students with consistently developed and consistently underdeveloped elementary school behavior reports?**

Differences are large for both achievement and behavior outcomes between those with consistently developed and consistently underdeveloped constructive elementary school behavior reports. But how do those differences compare to other more commonly-reported differences based on race, ethnicity, or family income? Figure 2, Panel A compares differences in achievement by constructive elementary school behavior report trajectory to black-white, family income, and Latinx-white achievement differences in the sample at seventh grade. On average, students designated by teachers as "consistently developed"

score 25 MAP RIT score points higher than those who teachers collectively classify as consistently underdeveloped on seventh-grade math test scores and 20 RIT score points higher on seventh-grade reading test scores. These are larger achievement differences than those based on low-income status (proxied by free/reduced price lunch participation) or Latinx-white differences. Black-white achievement differences remain larger for math and reading test scores, however; the black-white math test score difference stands high at 28 RIT score points while the black-white reading test score difference stands at 23 RIT score points (see Table B1 for standardized differences).

Figure 3, Panel B displays comparisons of median attendance and median discipline referral differences, given any incidents. The consistently developed/underdeveloped constructive elementary school behavior reports distinction presents the largest gap for seventh grade attendance compared to any of the demographic metrics. At the median, students with consistently underdeveloped constructive elementary school behavior reports miss about four more days of seventh grade instruction relative to those who had reports of consistently developed behaviors in elementary school. That compares to a three-absence difference between typical African American and white students, or based on family income. There is a half-day absence difference between Latinx and white students at the median.

Shifting to office disciplinary referrals (ODRs), we investigate the median number of incidents within each group, given any incidents. Because this obscures the prevalence of incidents among these groups, we first report the percentage of students with any ODRs within each group. About 14% of students with consistently developed reports of patterns of constructive behaviors in elementary school have at least one ODR, while 50% of those reported as consistently underdeveloped have any. About 18% of white students have at least one ODR compared to 55% of African American students and 32% of Latinx students. Finally, about 54% of students participating in free or reduced-price lunch have any ODRs compared to 21% of those not participating in a subsidized lunch program.

We now turn to ODR results in Figure 3, Panel B. Students with consistently underdeveloped constructive behavior reports have a median of four additional ODRs compared to their counterparts with consistently developed reports, given any incidents. This difference is the same size as the median difference between African American and white students, twice as large as the median FRL difference in ODRs among those with any and four times the number of incidents between Latinx and white students who have any ODRs.

## **How do early elementary school constructive behavior differences enhance our understanding of differences by race and family income?**

To investigate within- and between group differences further, we differentiate African American and white middle school students by teacher reports of their elementary school behavior trajectories (Figure 4). Panel A displays average seventh-grade math and reading achievement for white and African American students by early constructive behavior type, while Panel B displays average absences and ODRs for the same groups of students. African American students with consistently developed reports of constructive elementary school behaviors on average had seventh-grade math scores about fifteen MAP scale points lower and reading scores a ten scale points lower than typical consistently developed white

students. The seventh-grade math and reading scores of white students who teachers reported as consistently underdeveloped positive behaviors are only two scale points lower than the scores of their African American counterparts on math and reading test scores. The most dramatic contrasts arise when observing African American students with reports of consistently underdeveloped constructive school behaviors. This group of students scores nearly forty scale points (close to two standard deviations) lower than white students with consistently developed behavior reports and twenty-four scale points lower (about one standard deviation) than African American students with consistently developed behavior reports or white students with underdeveloped school behavior reports on seventh-grade math and reading tests.

About 10% of white seventh-grade students with reports of consistently developed school behaviors had any ODRs, and received a median of one ODR, given they had any. Meanwhile, a third of African American students with reports of consistently developed school behaviors received at least one ODR in seventh grade and a median of three, given any. The median number of absences for white and African American students who had consistently developed constructive school behavior reports were nearly identical, however, at about six. Roughly 40% of white seventh-graders with consistently underdeveloped constructive elementary school behavior reports had any ODRs, with a median of three given any. That compares to two-thirds of African American seventh-graders with any ODRs and a median of eight given any. African American students with consistently underdeveloped elementary behavior reports had about 13 absences in seventh grade compared to 10 among their white counterparts.

## What Does This Mean for District Policy?

We have three points for discussion based on these results. First, *early constructive behavior patterns distinguish students by achievement, behavior and discipline in useful ways*. Gaps between students with consistently developed and consistently underdeveloped elementary school behaviors are as large or larger than demographic indicators of inequality in educational outcomes. In combination, early constructive behaviors and racial indicators reveal even larger disparities than either alone. The black-white achievement gap in this sample of students is large, and stays relatively the same size once accounting for students' patterns of constructive school behaviors.

Second, *racial/ethnic identification and early constructive behavior report differences tap different aspects of students' school experiences*. A common narrative in schools is that black-white behavior differences are simply a reflection of the lower likelihood of African American students to conform to school rules and expectations. The fact that racial differences are as large as early constructive school behavior differences, and that they persist after accounting for early constructive school behavior report trends, both suggest regularly accounting for students' behaviors in school does not entirely explain why African American students do much worse academically and are disproportionately disciplined when they come to school. Yet after accounting for early constructive school behavior report patterns, racial differences in *absences* among those with consistently developed early constructive behavior reports disappear. African American and white students with consistently developed early constructive school behavior reports each average about six absences at the median in their seventh-grade year while African American and white students with consistently underdeveloped early constructive school behavior reports differ by only three absences at the median. Absences are arguably behaviors for which schools have little control, while

achievement and discipline are quite reasonably under the purview of schools. That average racial absence differences nearly or completely vanish between African American and white students within the same early behavior trajectory groups, while achievement and discipline differences persist, raise concerns around racial equity in the Madison Metropolitan School District.

Finally, *these results accentuate the need to follow students' patterns of constructive school behaviors over time*. If we were to observe these students at seventh grade alone, we might see only two groups: those who teachers believe are engaged and those who they believe are not engaged in school. Yet the greatest differences appear when comparing those with consistently developed or underdeveloped constructive behavior reports over time. Although we do not discuss students with developing and declining reports of behaviors, results elsewhere suggest their seventh-grade school success falls between those of students with consistently developed and underdeveloped reports of behaviors. Without these data points of early behavior reports, we might categorize students in any number of ways, based on their race or ethnicity, family income, or gender while looking into middle school suspensions, office disciplinary referrals, absences, or attitudes about school. In reality, some students have been reported as having consistently developed or underdeveloped behaviors, some being viewed as slowly disengaging from school while others have been perceived as improving over time. Thus, constructive school behavior report trajectories tell us some of what we already know about achievement and discipline differences among adolescents in schools while also telling us what we don't know based on common indicators. Specifically, we would miss the fact that teachers report some of these students as continuously improving while they see others' behaviors and academics as declining.

## Conclusion

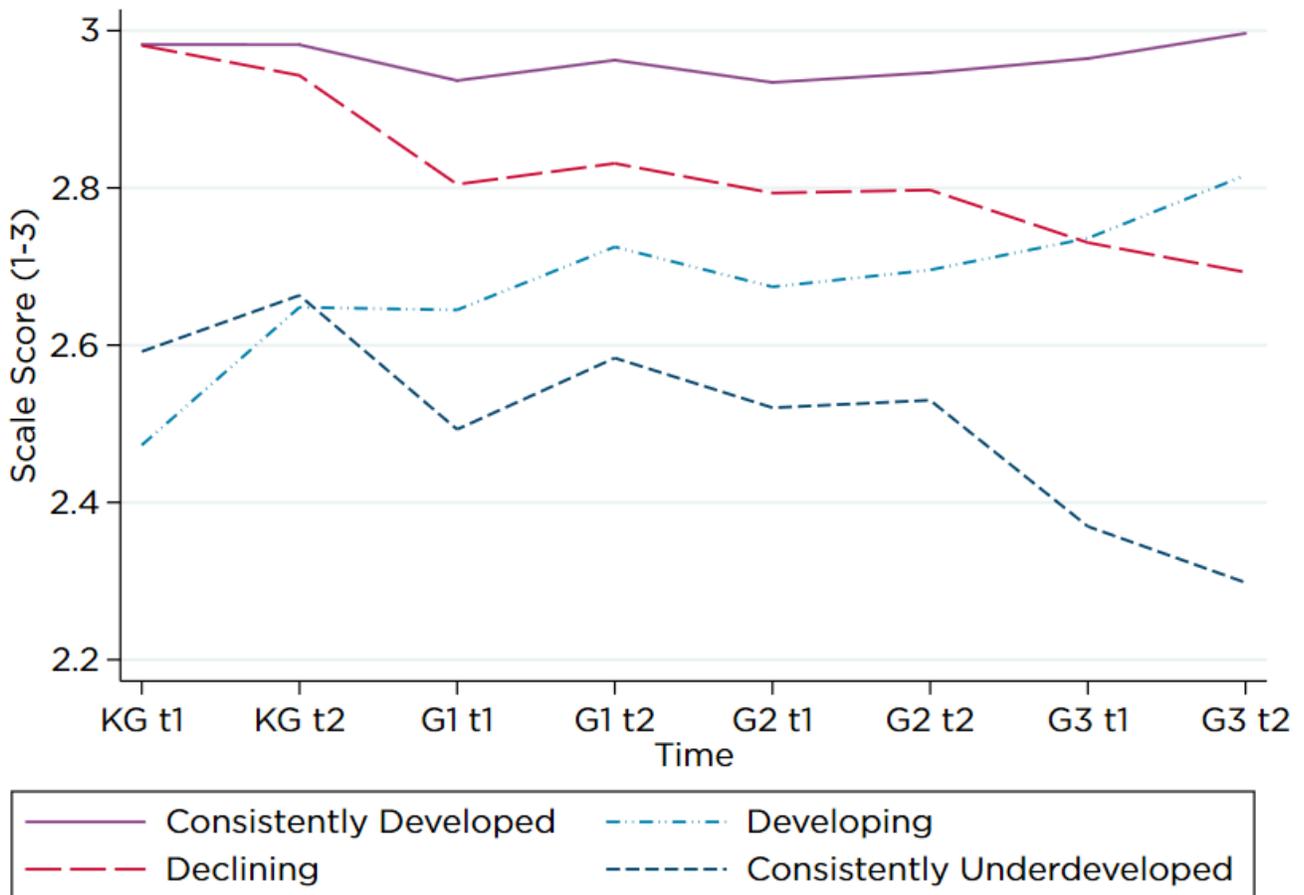
These findings pose challenges for communities as well as for the schools working with children and adolescents from those communities – ones that must be addressed for all students to take advantage of the learning opportunities schools offer. For district practitioners, the link between early teacher reports of constructive behaviors and later outcomes suggests two directions. First, it suggests that teacher reports of early behaviors yield valuable information beyond the demographic characteristics of students. Early targeted supports and interventions might aid those at the highest risk for later school challenges. The district currently uses new items aimed at capturing student's constructive in-school behaviors. Under this new regimen for capturing behavior reports of students, teachers do not rate each student on every item, and might rate different items for the same student in different years. Thus, it is not possible under the new system to track the development of constructive behavior reports for all elementary school students in the district.

We recommend that schools and the district use universal reports of early constructive behavior and attitudinal data that are already available to them, such as any historical teacher-evaluated report card items or student surveys, to identify groups of students who might be in need of targeted support. In addition, we recommend that the district consider re-implementing a comprehensive and universal early constructive school behavior assessment, in addition to or in place of their current measurements. The district might do so by considering reinstating such evaluations as report card items that are used consistently, rather than the current system of identifying a short list of strengths and challenges, which is very difficult to use to draw conclusions about students' behaviors over time. Valid and reliable instruments, such

as the Social Skills Rating Scale found in the Early Childhood Longitudinal Study – Kindergarten cohort, already exist and measure teacher reports of constructive school behaviors at a level granular enough to be useful for predicting later school outcomes.

FIGURES

Figure 1. Average constructive school behavior trajectories by type (Grades K-3)



Note: Behavior trajectories are derived from 13 teacher-reported items rating students' in-class behaviors on a scale of 1 to 3. Intercepts at kindergarten entry differentiate students who are rated by teachers within a half a standard deviation from the highest possible mean score of three and those rated below one-half standard deviation from the highest possible mean score. KG means "kindergarten." G1, G2, and G3 mean grade levels 1, 2, and 3; t1 means "school term 1" and t2 means "school term 2"

Figure 2. Reports of constructive school behaviors by race and ethnicity

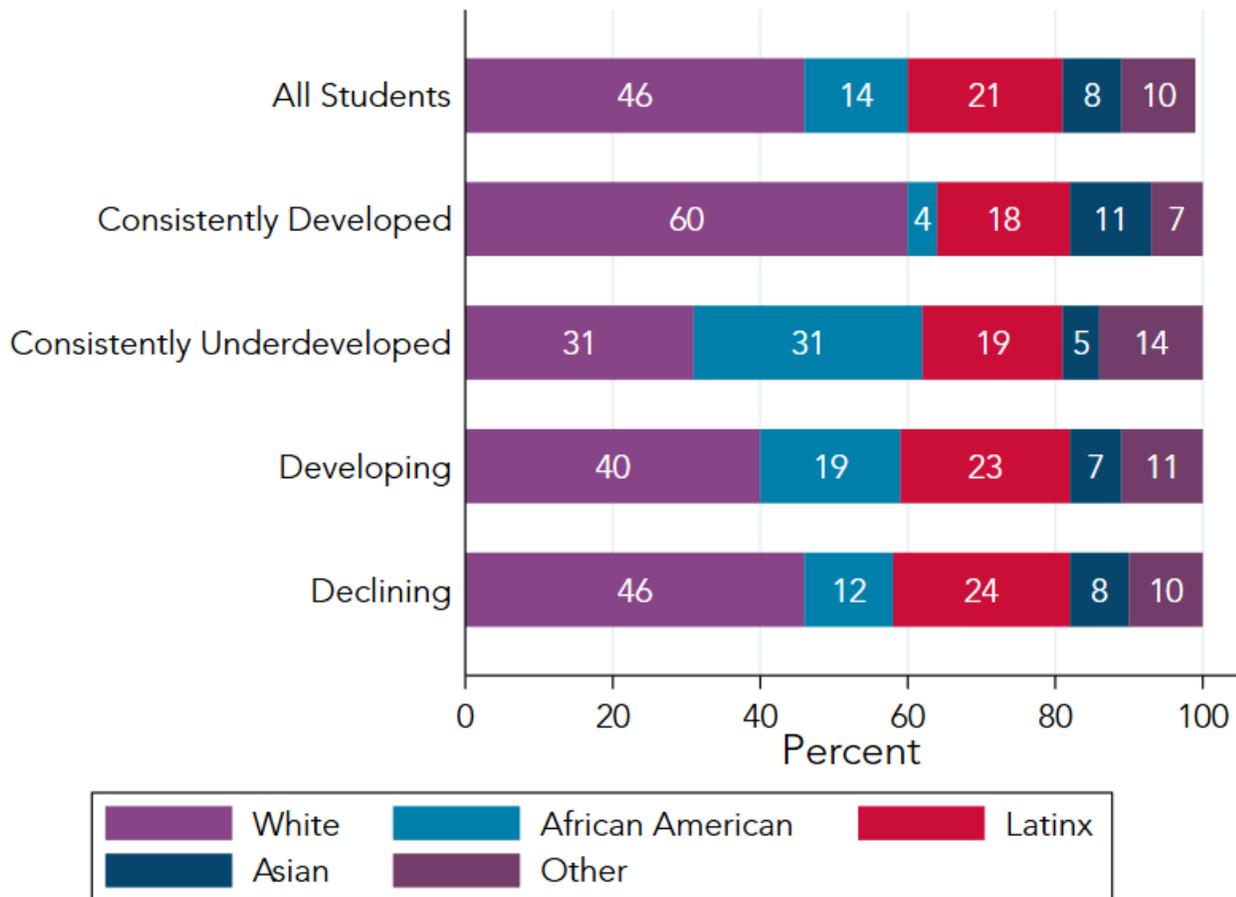
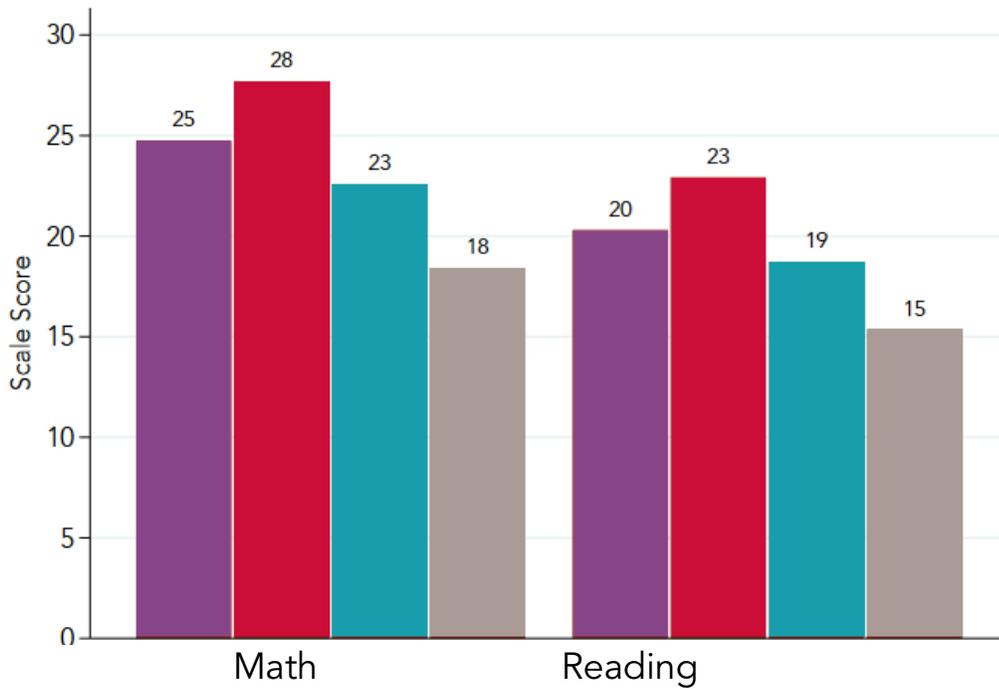
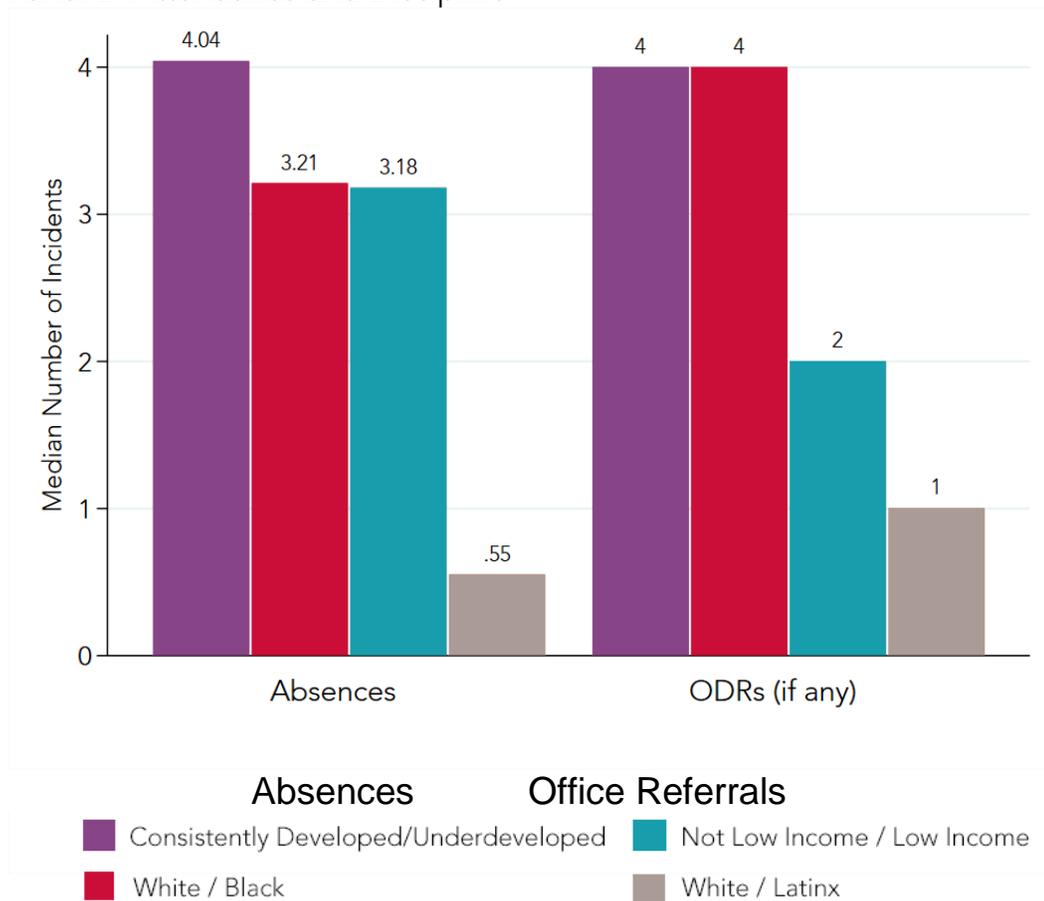


Figure 3. Seventh-grade achievement, attendance and discipline gaps  
 Panel A: Test Scores



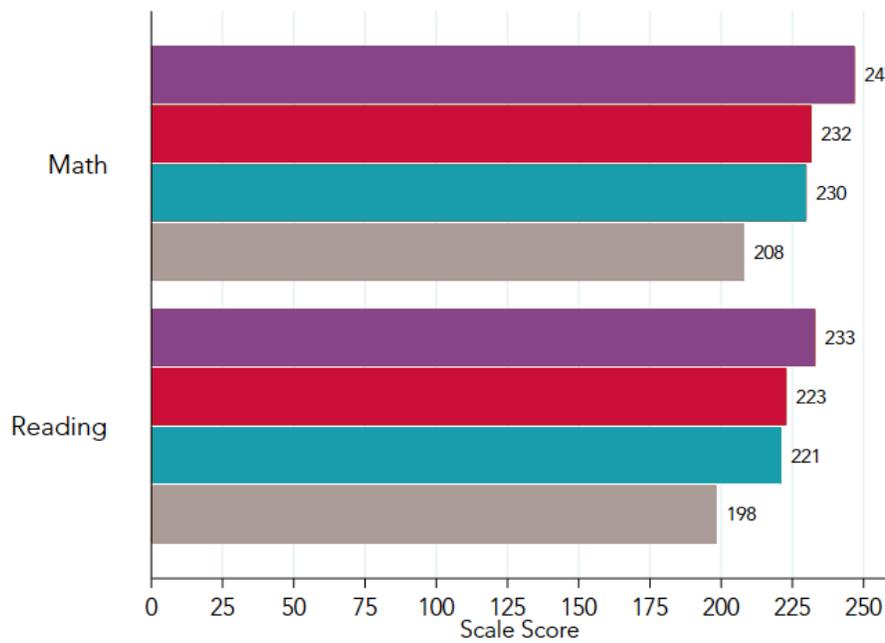
Panel B: Attendance and Discipline



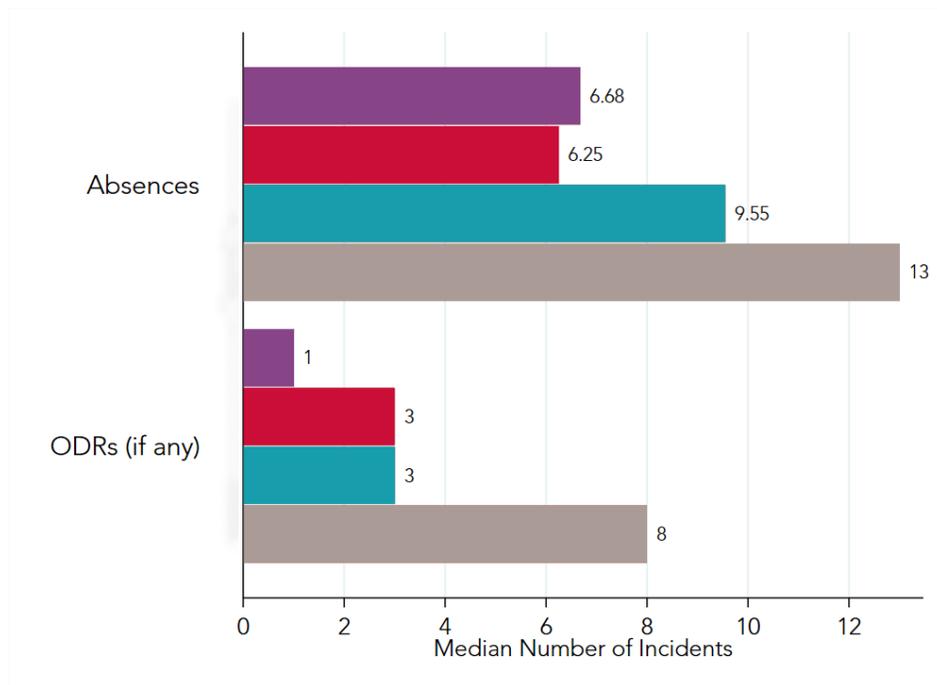
Note: N=2,759. Achievement gaps are observed differences in Measures of Academic Progress (MAP) math and reading test scores between groups in seventh grade. Consistently developed and consistently underdeveloped elementary school constructive behavior report patterns are derived from 13 teacher-reported items rating students' in-class behaviors on a scale of 1 to 3.

Figure 4. Seventh-grade achievement, discipline, and behavior by reports of constructive school behaviors and race

Panel A: Test Scores



Panel B: Absences and Discipline



- Consistently Developed, White
- Consistently Underdeveloped, White
- Consistently Developed, Black
- Consistently Underdeveloped, Black

Note: N=2,759. Achievement gaps are observed differences in Measures of Academic Progress (MAP) math and reading test scores between groups in seventh grade. Consistently developed and underdeveloped constructive school behavior report patterns are derived from 13 teacher-reported items rating students' in-class behaviors on a scale of 1 to 3.

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## APPENDIX A

Table A1. Teacher-Reported Constructive School Behavior Items

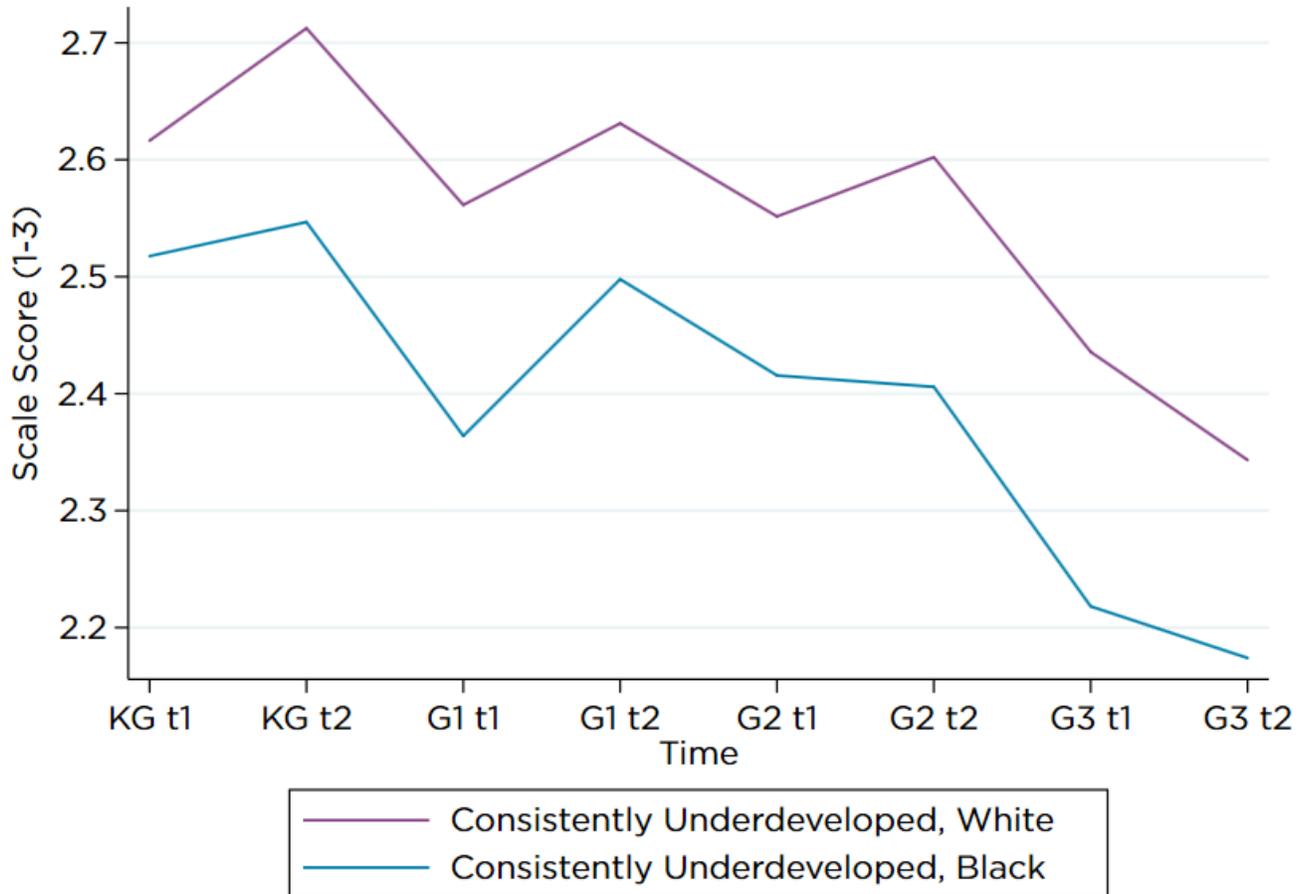
1. Accepts responsibility for own behavior
2. Completes assignments on time
3. Demonstrates self-control
4. Demonstrates listening skills
5. Follows oral directions
6. Organizes materials and time
7. Participates in classroom activities
8. Persists in tasks until completion
9. Respects rights, diversity, and feelings of others
10. Solves conflicts appropriately
11. Takes positive risks in learning and social situations
12. Works cooperatively with others
13. Works independently

Table A2. Sample attrition

	Sample 1 N=3,742	Sample 2 N=2,759
Race/ethnicity		
White	0.45	0.45
African American	0.15	0.15
Latinx	0.22	0.22
Asian	0.08	0.08
Multiracial or Other	0.10	0.10
Female	0.49	0.49
FRL - grade 5	0.47	0.46

APPENDIX B

Figure B1. Constructive School Behavior Reports among White and African American Students in the Consistently Underdeveloped Group



KG=kindergarten, G1=grade 1, G2=grade 2, G3=grade 3, t1=term 1, t2=term 2.

Table B1. Achievement Gaps in Scale Score and Z-Score Units

	MAP Math		MAP Reading	
	Scale Score	Z-Score	Scale Score	Z-Score
Consistently Developed/ Underdeveloped Behavior Reports	25	1.19	20	1.13
White/Black	28	1.34	23	1.29
Not FRL/FRL	23	1.11	19	1.04
White/Latinx	18	0.89	15	0.85