

Is the Black-White Achievement Gap a Public Sector Effect? An Examination of Student Achievement in the Third Grade

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Abstract: *Prior research has suggested private school education in middle school and high school as a solution for the Black-White achievement gap. However, more recent research calls this solution into question. Additionally, research increasingly implicates third grade as being of preeminent importance in driving students' subsequent academic achievement. Consequently, this study relied on a nationally representative sample to compare standardized test scores of Black and White third graders who attended private schools. Regression analysis revealed achievement gaps in reading, math, and science. These achievement gaps were not significantly different from those detected in public schools. Hence, school vouchers may be inadvisable for most minority students.*

Introduction

An achievement gap between Black and White students has been documented consistently at all education levels. Recent analysis indicated that among all first-time, post-secondary students, 36% of White students attain bachelor's degrees within six years compared with only 17% of Black students (Radford, Berkner, Wheelless, & Shepherd, 2010). Of fourth and eighth graders who scored above the 75th percentile in reading and math on the National Assessment of Educational Progress (NAEP) in 2011, more than 70% were White and fewer than 8% were Black—despite some narrowing of average achievement gaps since the early 1990s (National Center for Educational Statistics [NCES], 2011a; 2011b). Fryer and Levitt (2004) have detected evidence of the Black-White achievement gap as early as kindergarten, and Burchinal et al. (2011) identified this gap among low income children as young as three years old in the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SEC-CYD).

This pervasive Black-White achievement gap has severe long-term consequences because it perpetuates historical racial differences in socioeconomic status (SES)—where SES is generally measured through a three-pronged approach: educational attainment, income, and occupational status. In particular, the Black-White achievement gap is directly connected to educational attainment (Radford et al., 2010). Furthermore, education also has an indirect impact on the remaining components of SES through its association with lifetime wage premiums (Taniguchi, 2005) and through its relationship to minimum eligibility requirements in most higher status professions.

Before proposed remedies for the Black-White achievement gap can be assessed, the genesis of the gap must be better understood. Consequently, in the next section, I review three potential explanations for the Black-White achievement gap tested in the empirical literature: family background, peer pressure, and school effects. In doing so, I place particular emphasis on the focus of this study (i.e., school sector).

Explanations of the Black-White Achievement Gap Family Background

Extant literature reports a strong correlation between family background and the Black-White achievement gap. Yeung and Pfeiffer (2009) tested this correlation via the Panel Study of Income Dynamics (PSID) on an initial sample of about 3,500 children under age 13 in 1997, followed to 2002 and 2003 when participant ages ranged from 8 to 18. Hierarchical regression analysis indicated that gaps in letter-word scores through sixth grade and applied problems scores up to third grade were accounted for by children's early family backgrounds (e.g., grandparent's education, characteristics related to the mother [e.g., teen birth] and the child [e.g., birth weight], SES; family structure; and other family characteristics). By high school, although early family background continued to have explanatory power, it no longer accounted for 50% to 75% of achievement gaps evaluated. Gutman, Sameroff, and Eccles (2002) found that recent family risk factors also had explanatory power among 837 African American seventh graders in the Maryland Adolescent Development In Context (MADIC) study. More specifically, a risk index predicted grade point average, number of school absences, and math

achievement—where the measure of risk included current maternal SES, maternal depression, single parenthood, the presence of three or more children in the same household, recent stressful family events (e.g., unemployment), and neighborhood poverty.

The literature also has identified positive family characteristics and proactive behaviors that bolster academic achievement among African Americans. These characteristics and behaviors have included consistent discipline and decision making (Gutman et al., 2002), and educational resources (e.g., more than 50 books at home [Roscigno, 1998]). Other supportive family-related factors are high parental expectations for educational attainment, parental school involvement, extracurricular trips and classes, and saving for college (Charles, Roscigno, & Torres, 2007).

Peer Pressure

The Black-White achievement gap has sometimes been attributed to Black students' fear of being alienated from their Black peers should they emulate more academically successful White students. This fear—commonly called the fear of “acting White”—is typically credited to Fordham and Ogbu (1986). Despite its relatively lengthy history, Fordham and Ogbu's (1986) theory is controversial and has uneven empirical support.

In their survey of 166 gifted Black students in two school districts in Ohio, Ford, Grantham, and Whiting (2008) uncovered support for the theory of “acting White” and concluded:

Specifically, acting Black is associated with negative behaviors, low intelligence, disinterest in school and achievement, poor language skills, and a preference for urban clothes. On the other hand, acting White is associated with positive behaviors and positive stereotypes—being intelligent, caring about school, doing well academically, being well behaved, and being perfect. Acting White is also associated with being arrogant or believing that one is better than others. (p. 232)

However, larger sample research tends to report that White peer groups hold more negative stereotypes about academic achievement than do Black ones (Roscigno, 1998)—challenging the creditability of the theory of “acting White” as an explanation for the Black-White achievement gap. Additionally, much of the qualitative literature has suggested that although pressures of “acting White” exist, this phenomenon is complex and far from pervasive. In a study of college-bound African American females, Horvat and Lewis (2003) concluded that pressures of appearing too academically successful among some peers were offset by other supportive peer relationships as well as by strong Black identity. Additionally, Tyson, Darity, and Castellino (2005) reported that self-doubt, not peer pressure, precluded higher performing African Americans from enrolling in advanced coursework. Among more at-risk students, Chavous et al. (2003) determined that strong, positive ethnic identity was associated with higher levels of educational attainment.

School Effects

Nonsector specific school effects. Much of the literature implicates schools as contributing to the persistence of Black-White

achievement gaps. Oates (2009) found that school quality (e.g., percent of graduates who attend college) and teacher perceptions (e.g., perceptions about which students complete homework) were the primary explanations of the Black-White achievement gap based on structural equation modeling conducted on the National Educational Longitudinal Study. Hanushek and Raymond (2005) further established that No Child Left Behind (NCLB) has had little impact on achievement gaps and that these gaps are perpetuated by increasing minority concentrations in schools. Hanushek and Rivkin (2009) estimated that reducing minority concentration and inexperienced teachers would eliminate between 15% and 20% of the growth in the achievement gaps from fourth to eighth grade based on Texas administrative data. Condrón (2009) concluded that although class gaps widen in the summer, achievement gaps widen during the school year—implicating schools as contributing to the Black-White achievement gap.

However, the prior evidence is not incontrovertible. Ferguson (2003) clarified that teachers' expectations have been classified as biased when these expectations have correctly incorporated students' past performances. His review of the literature suggested that teacher perceptions of past and current performance are unbiased—although he affirmed that teacher expectations may in some ways contribute to the achievement gap. Bali and Alvarez (2004) questioned the association between minority concentrations and achievement gaps by exploring outcomes in the Pasadena Unified School District (PUSD), where the average White student attended 66% minority schools. Achievement gaps developed that were not explained by numerous measures of school quality (e.g., the percentage of fully credentialed teachers, years of teaching experience, number of computers per student, class size, and state benchmarks of school quality). Additionally, Downey, von Hippel, and Broh (2004) concluded achievement gaps increased less rapidly during the school year than during the summer—suggesting that schools may be part of the solution to the achievement gap.

Private schools as a solution to the achievement gap. Potentially, school sector rather than the preceding, more generic criticisms might help both explain and remedy the achievement gap. Given existing enrollment patterns in private schools, however, the potential for private school education to provide a comprehensive, naturalistic solution appears unlikely. Available evidence suggests not only that African American students are underrepresented in U.S. private schools today, but also that their enrollment in private schools has declined over time. More specifically, Betts and Fairlie (2001) reported that Black students represent 16% of private, primary school enrollment and 11% of secondary school enrollment based on 1990 Census Micro-data. National Center for Education Statistics (NCES) reported that, during the 2009-2010 school year, only 9% of the 4.7 million students enrolled in the nearly 33,400 private schools in the United States were Black (Broughman, Swaim, & Hryczaniuk, 2011).

Evidence from qualitative research indicates considerable diversity in the range of experiences that underrepresentation in private schools might trigger for Black students. For example, Perry (1988) provided an autoethnography of a 15-year-old female Black student who enrolled in public school out of a sense of racial isolation after

10 years of private school education. She discovered that her new public school prized rote memorization and good behavior. It did not emphasize the intellectual abstraction that she had become accustomed to in her private school. Both racially and intellectually isolated in her advanced classes in public school, she returned to private school. DeCuir-Gunby (2007), on the other hand, describes the cultural isolation of six, high achieving Black students at a private, college preparatory school. These students explained that they did not have equal opportunity at their private school. Its rigid class structure fostered greater privileges for traditional White students, so that African Americans could not fully participate in its educational and cultural benefits.

Although insightful, qualitative research is not intended to provide conclusive evidence about the impact of private schools on the education of Black students as a whole. Much of the early large-scale, quantitative evidence concluded that Catholic schools in particular offered an advantage for African American students. This evidence was primarily based on nationally representative data from High School and Beyond (HS&B), which followed U.S. high school sophomores starting in 1980. Hoffer, Greeley, and Coleman (1985) reported that Catholic school students in HS&B were at least half a year ahead of public school students on average—with even greater benefits accruing to Black students. Explanations for better performance among Catholic school students included greater academic rigor and more homework. Sander's (2000) subsequent analysis of HS&B suggested that homework was a less likely explanation for White students' performance in Catholic schools than for minority students. More specifically, he estimated that White students in Catholic schools did an extra 15 - 30 minutes of homework per week, but that minority students did an additional 1.5 - 2.5 hours of homework per week.

More recent analysis suggests that private school advantages may have dissipated. Hallinan and Kubitschek (2012) compared the academic achievement of sixth and eighth graders in Chicago public schools and Catholic schools from 2001 to 2004. On the whole, neither private nor public school students exhibited a pattern of superior performance. Black students in Catholic schools tended to have higher reading scores (i.e., 3 points higher in sixth grade and 5 points higher in eighth grade). At the same time, the growth in their math scores was 6 points lower in sixth grade, and 8 points lower in eighth grade in comparison with public school students.

S. T. Lubienski and C. Lubienski (2006) relied on math achievement scores from the 2003 administration of NAEP to examine a more comprehensive set of private schools: Catholic schools, Lutheran schools, conservative Christian schools, and other private schools. Initial analysis indicated certain private school students had higher scores than did public school students. In particular, math achievement scores among Catholic and other private school students were 14 points higher, whereas students in Lutheran schools scored 21 points higher. After the introduction of demographic control variables, differences in math achievement were significantly negative for Catholic school students by 3.6 points, conservative Christian school students by 10.6 points, and other private school students by 2.3 points. Public school students' and Lutheran students' math scores were no longer significantly different.

Purpose of the Study

This study contributes to the literature by evaluating the achievement gap in private schools at third grade, a period much earlier than traditionally examined in the literature. A single year of poor academic performance is not an inevitable death knell for any given student's future academic performance. However, empirical evidence implicates academic achievement in third grade as a pivotal predictor of future academic performance and attainment among students as a whole. Lesnick, Goerge, Smithgall, and Gwynne (2010) detected a chain reaction related to third grade reading achievement in particular—based on an initial sample of 25,948 Chicago Public School (CPS) third graders in 1996-1997 and 2008. More specifically, reading below grade level in third grade was associated with lower reading achievement in eighth grade; which was associated with lower ninth-grade course performance; which was associated with reduced high school graduation and college attendance. The net impact of this chain reaction was that less than 20% of students who read below grade level in third grade attended college. Similarly, Hernandez (2011) concluded that in comparison with proficient readers in third grade, students who were not proficient were four times less likely to graduate from high school—based on 3,975 students in the National Longitudinal Survey of Youth.

The importance of third grade extends beyond reading achievement. Based on a sample of 538 children in Greensboro, North Carolina, McClelland, Acock, and Morrison (2006) detected stability by third grade in poor learning skills (e.g., self-regulation, responsibility, independence, and cooperation) initially identified in kindergarten. Poor learning skills in turn were correlated with lower reading and math achievement through sixth grade controlling for such factors as IQ, race, and maternal education. Additionally, Grimm's (2008) latent growth curve analysis indicated that reading comprehension in third grade was associated with higher order math skills (e.g., problem solving) through eighth grade in a sample of 46,373 CPS students.

Method

Data for this study were obtained from the third grade wave of the ECLS-K (NCES, 2004). ECLS-K student-level participants ($N = 21,260$) were selected initially during kindergarten through three-stage-probability-weighted sampling, where the primary, secondary, and tertiary sample units were (1) geographic area, (2) school within geographic area, and (3) student within school, respectively. The third-grade database (2001-2002) consists of cognitive assessments; physical measurements of height and weight; and student, parent, teacher, and school administrator responses to structured interviews or questionnaires.

Participants

Our sample consisted of all Black students in the ECLS-K in 2002 who were (a) enrolled in a private school, (b) on grade level, and (c) who had standardized test scores on the NCES assessments in math, reading, and science ($n = 129$). The restriction on grade level caused 11 Black students to be excluded from the study (i.e., eight were enrolled in second grade; two were in fourth grade; and one was enrolled at a school where grade levels were not determined).

Additionally, four Black students were excluded from the study because these participants had at least one missing assessment score.

The number of Black children who attended private school differed substantially from the number of White students who attended private school ($n = 1,822$). To avoid complications that differences in sample sizes might create for statistical testing, I drew a stratified random sample of White students ($n = 129$) from the ECLS-K. This second sample satisfied the same three criteria as the Black sample, and was stratified by private school type (i.e., Catholic school, other religious school, nonreligious school) to reflect the private school types of the African American sample. Table 1 provides more detailed descriptive statistics about the sample.

Table 1

Descriptive Data for Student Subsamples by Race

Measure	Black Students		White Students	
	<i>n</i>	%	<i>n</i>	%
Gender				
Male	55	42.6	54	41.9
Female	74	57.4	75	58.1
SES				
SES quintile 1	6	4.7	1	0.8
SES quintile 2	8	6.2	4	3.1
SES quintile 3	38	29.5	22	17.1
SES quintile 4	44	34.1	35	27.1
SES quintile 5	33	25.5	67	51.9
School Status				
Catholic school	77	59.7	77	59.7
Other religious	42	32.6	42	32.6
Other private school	10	7.7	10	7.7
Total participants	129	100	129	100

Measures

Assessments. Students' standardized assessment scores in math, reading, and science served as the dependent variables in our analyses. NCES administered these standardized assessments one-on-one with students during the spring of third grade. Reliabilities of these assessments were measured as theta and were considered to be high (i.e., .95 for math, .94 for reading, and .88 for science; Tourangeau et al., 2004). NCES established content and construct validity for these assessments through expert panel and pilot testing as well as through comparisons with national/state standards and commercial/state achievement tests.

Race and other covariates. Race was dummy coded so that 1 = Black student; 0 = White student. Similarly, gender was defined so that 1 = Male and 0 = Female, whereas Catholic schools were designated as 1 and non-Catholic schools were designated as 0. School enrollment was assessed through an indicator variable ranging from 1 (0-149 students) to 5 (750 or more students). Finally, SES was evaluated by quintiles for descriptive purposes as well as via a continuous variable for inferential purposes.

Data Analysis

Preliminary data analyses consisted of descriptive analyses of the dataset and a univariate comparison of Black and White student standardized tests scores (i.e., *t*-tests both with and without a Bonferroni correction for serial analysis of the data). Subsequent regression analysis controlled for SES, gender, school enrollment, and Catholic school attendance. Additionally, interactions were evaluated to determine whether regression results differed by race. Standard errors and significance testing were corrected through Am Version 0.06.03 Beta. Analyses were weighted with the appropriate sample weight provided in the ECLS-K dataset (i.e., the cross-sectional weight for student assessment and parental interviews—with parental interviews having provided the necessary data for the determination of SES).

Results

Univariate Results

Table 2 indicates that Black students' mean scores in reading, math, and science were over a standard deviation lower than those of White students. These differences are significant with or without a Bonferroni correction for serial analysis. White females outscored White males in reading without a Bonferroni adjustment. No other significant differences related to gender were detected for either White or Black students. Additionally, no significant differences were found between assessment scores for Catholic versus non-Catholic schools for either race.

Multivariate Regression

Table 3 reports the results for three multivariate regressions where standardized test scores in reading, math, and science served as the dependent variables. Analyses were controlled for race, gender, SES, school enrollment, and Catholic (versus non-Catholic) school type. Race and SES were consistently significant in each regression. Being a Black student was associated with about 12-, 13-, and 8-point lower scores in reading, math, and science, respectively. A one unit increase in SES, on the other hand, was associated with 9-, 9-, and 6-points higher scores in reading, math, and science, respectively. No other variables in any of the regressions were significant, but each regression had reasonable explanatory power (i.e., $R^2 = .30, .38, \text{ and } .42$ for reading, math, and science, respectively). The interaction between Catholic school and race and the interaction between race and gender were tested in supplemental analyses, but were not found to be significant. Subsequent analysis indicated that the achievement gaps identified among private school students did not differ significantly from those exhibited by their peers in public school.

Table 2

Means, Standard Errors (SE), and Standard Deviations (SD) of Standardized Test Scores in Reading, Math, and Science for Private School Students by Race, Race/Gender

Category	Reading	Math	Science
Race			
White students			
Mean (SE)	118.763* (1.646)	92.334* (1.459)	38.692* (1.074)
SD	14.744	13.604	8.975
Black students			
Mean (SE)	101.605* (2.047)	74.704* (1.592)	27.767* (0.933)
SD	17.025	14.292	8.039
Gender Comparisons by Race			
Female White students			
Mean (SE)	121.605** (2.220)	91.007 (1.726)	38.171 (1.487)
SD	14.122	13.351	9.270
Male White students			
Mean (SE)	114.325 (2.198)	94.407 (2.656)	39.507 (1.482)
SD	14.600	13.737	8.429
Female Black students			
Mean (SE)	101.534 (3.007)	73.219 (2.135)	26.683 (1.116)
SD	18.768	14.532	7.881
Male Black students			
Mean (SE)	101.707 (2.504)	76.846 (2.413)	29.331 (1.593)
SD	14.136	13.656	8.008

*Significantly different $p < .001$ across like assessments. Results were significant with or without a Bonferroni correction for serial analysis of the data.

**Significantly different $p < .05$ across like assessments. Results were significant without a Bonferroni correction for serial analysis of the data.

Table 3

Regression Analyses: Predictions of Reading, Math, and Science Achievement Scores

Covariates	Reading		Math		Science	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	111.214*	3.960	87.562*	3.386	32.673*	2.142
Black	-11.810*	2.537	-13.175*	2.218	-7.566*	1.440
Male	-3.318	2.543	3.019	2.055	1.638	1.228
SES	8.809*	2.366	9.078*	1.911	5.786*	1.191
School enrollment	0.675	1.309	-0.403	1.119	0.323	0.671
Catholic	3.146	2.665	1.898	2.005	1.846	1.226
R2	.296		.381		.416	

Note. Black student = 1; White student = 0. Male = 1; Female = 0. Catholic School = 1; non-Catholic school = 0.

* $p \leq .001$.

Discussion

Our findings contribute to the debate about school choice as a solution to the achievement gap by evaluating the achievement gap in a pivotal year in education, third grade—with third grade achievement and learning skills being highly associated with both subsequent educational achievement and attainment (Grimm, 2008; Hernandez, 2011; Lesnick et al., 2010; McClelland et al., 2006). Our analysis indicated that a Black-White achievement gap exists in private schools by third grade in reading, math, and science. Furthermore, this achievement gap did not differ significantly from the Black-White achievement gap in public schools.

Our findings should be evaluated in consideration of several limitations. First, our analysis was correlational and not causal. Additionally, our study does not attempt to account for unobserved factors that might drive one set of students to attend private school instead of public school. However, prior literature has suggested that private school students and their families may be more educationally oriented (C. Lubienski, Weitzel, & S. T. Lubienski, 2009), so that failure to control for these unobserved factors only biases private school students' achievement upward. Additionally, findings are indicative of differences in private and public schools as a whole, and individual cases may vary substantially from average.

Our study has important implications for policymakers. In particular, it suggests that the use of vouchers may not be effective for reducing the Black-White achievement gap. If policymakers continue to favor vouchers, then these vouchers should be accompanied with comprehensive evaluations of school choice options that include an accurate system of school ratings. These evaluations should also provide a caveat that, on average, private school enrollment is not associated with reduced achievement gaps. This suggestion is well aligned with other literature that has concluded that only regulated school choice is likely to be effective (Cobb & Glass, 2009).

Additionally, this study has important implications for parents. Despite unprecedented demands that they face, parents remain the ultimate stewards for their children. If they want to consider private school education for their children, then, at present, nothing exists to substitute for their personal assessments and investigations of private school alternatives. Regardless of their choice of school sector, African American families in particular must personally advocate for their children to protect them from alienation and exclusion from advantages in both sectors. I find it necessary, but unsettling, that this advice has to be given to African American parents—many of whom are less accustomed to navigating the educational system on behalf of their children and, therefore, at a disadvantage.

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