American Journal of Orthopsychiatry
2016, Vol. 86, No. 1, 10–23

http://dx.doi.org/10.1037/ort0000122

The Increasing Impact of Socioeconomics and Race on Standardized Academic Test Scores Across Elementary, Middle, and High School

Gwyne W. White, Cesalie T. Stepney, Danielle Ryan Hatchimonji, Dominic C. Moceri, and Arielle V. Linsky
Rutgers, The State University of New Jersey

Jazmin A. Reyes-Portillo
Columbia University Medical Center

Maurice J. Elias
Rutgers, The State University of New Jersey

For students and schools, the current policy is to measure success via standardized testing. Yet the immutable factors of socioeconomic status (SES) and race have, consistently, been implicated in fostering an achievement gap. The current study explores, at the school-level, the impact of these factors on test scores. Percentage of students proficient for Language and Math was analyzed from 452 schools across the state of New Jersey. By high school, 52% of the variance in Language and 59% in Math test scores can be accounted for by SES and racial factors. At this level, a 1% increase in school minority population corresponds to a 0.19 decrease in percent Language proficient and 0.33 decrease for Math. These results have significant implications as they suggest that school-level interventions to improve academic achievement scores will be stymied by socioeconomic and racial factors and efforts to improve the achievement gap via testing have largely measured it.

Although much has been written about the relationship between socioeconomic status (SES) and racial/ethnic background and academic achievement (Diaz, 2008; Krueger, 2003; Scafidi, Sjoquist, & Stinebrickner, 2007), the full measure of the relationship is still underappreciated. After 10 years of test-driven standards implemented as a result of No Child Left Behind (2002) legislation and despite the shift heralded by the Common Core (Common Core State Standards Initiative, 2010a, 2010b) in support of nationwide achievement goals—represented by standardized and internationally competitive content guidelines in the areas of English language arts and mathematics—it seems clear that poor and minority children have not and will not be able to meaningfully experience equity as defined by the current conceptualization and operationalization of standardized test scores (Gaddis & Lauen, 2014). These nationwide policies and the resulting accountability pressure have led to reforms that focus on mutable factors within schools. Factors considered modifiable are often looked upon as potential sources of school reform, specifically classroom size, school size, and teacher mobility (Ehrenberg, Brewer, Gamoran, & Willms, 2001; Leithwood & Jantzi, 2009) are seen as, and shown to be, related to school performance. However, this focus may not attend sufficiently to the impact of school-level SES and racial composition. Thus, although reforms work to document progress with standardized test scores, these tests may be, in fact, measures of less mutable factors, such as school-level race and SES, factors which may further exert a compounding impact on achievement. The present study examines whether the constraints resulting from SES and race create limitations that leave little room for modifiable factors as a source of second-order change in the test score status of schools and the students in them.

We begin with a brief review of the prevailing perspectives on the modifiable school success factors, specifically classroom size, school size, and teacher mobility, and their influence on achievement. In a summary of 164 studies exploring the impact of class size on academic achievement, Hattie (2005) found that the average effect size was 0.13, representing about a 9% improvement of a student's performance in a small over a large class, mirroring the results of a similar study of the effect size of improvement because of the smaller classes (Molnar et al., 1999). Most studies have found the greatest benefits of smaller classes for younger students (Blatchford, Moriarty, Edmonds, & Martin, 2002; Blatchford, Russell, Bassett, Brown, & Martin, 2007), and Finn, Gerber, and

Gwyne W. White, Cesalie T. Stepney, Danielle Ryan Hatchimonji, Dominic C. Moceri, and Arielle V. Linsky, Psychology Department, Rutgers, The State University of New Jersey; Jazmin A. Reyes-Portillo, Division of Child Psychiatry, Columbia University Medical Center; Maurice J. Elias, Psychology Department, Rutgers, The State University of New Jersey.

Correspondence concerning this article should be addressed to Gwyne W. White, Rutgers, Psychology Department, The State University of New Jersey, Tillett Hall, 53 Avenue East, Piscataway, NJ 08854. E-mail: gwyne.white@rutgers.edu

Boyd-Zaharias (2005) reported lasting benefits from these early small class experiences, including better behavior, increased engagement and higher levels of graduation once the pupils return to regular classes, a finding partially supported by others (Fletcher, 2009; Galton & Pell, 2012). Educators often advocate for smaller schools, a goal that is supported by research showing that not only school (Lee & Loeb, 2000) but also district (Bickel & Howley, 2000) size can impact student achievement. In a study of elementary schools, small schools (less than 400 students) allowed closer relationships among both teachers and students, and teachers in small schools had a greater sense of responsibility for students' academic and social development (Lee & Loeb, 2000). Student achievement data suggest that achievement gains are significantly influenced by teachers' effectiveness (Borman & Dowling, 2008; Rivkin, Hanushek, & Kain, 2005; Shernoff, Mehta, Atkins, Torf, & Spencer, 2011). However, teachers generally need to acquire 5 years of experience to become fully effective at improving student performance (Rivkin et al., 2005). Unfortunately, chronic turnover among new teachers can be particularly high, with up to 23% of public school teachers leaving their school within their first five years of teaching, and of these, 9% leave teaching entirely (Keigher, 2010). This issue can be worsened by the practice of placing new teachers in high-poverty, urban communities where significant numbers of teachers leave within their first five years (Barnes, Crowe, & Schaefer, 2007; Borman & Dowling, 2008), an issue further exacerbated by resegreation (Jackson, 2009). Additionally, chronic discontinuity in staffing at the school level can create a negative school climate, as the school can be perceived as undesirable (Kardos, Johnson, Peske, Kauffman, & Liu, 2001). In a comprehensive single study of the impact of turnover, Ronfeldt, Hamilton, Loeb, and Wycoff (2013) found preliminary indications that the disruption caused by teacher mobility was itself a significant factor, not just the departure of more experienced teachers.

These factors—classroom size, school size, and teacher mobility—were reviewed to provide evidence toward their inclusion in a model in which the goal is to observe the impact of SES and race, over such modifiable variables. The No Child Left Behind Act (2002) states that one of its purposes is to eliminate the achievement disparity between student groups, specifically Black, Hispanic, and those living in poverty, when compared with White and more affluent students. These elements were targeted as the SES and racial make-up of a school have consistently been found to produce an achievement gap (Diaz, 2008; Krueger, 2003; Scafidi et al., 2007). In the United States, when we speak of the issue of poverty, we are speaking of an estimated 22% of all children (U.S. Census Bureau, 2012). Further, racial minorities are disproportionately found in poverty, with Black children representing 14% of all children but constituting 26% of children in poverty. Children of Hispanic origin, regardless of race, represent 23% of all children and make up 32% of children in poverty (U.S. Census Bureau, 2011).

There is a robust, though somewhat inconsistent, literature demonstrating the detrimental impact of poverty and its many correlates on academic achievement (Lindo, 2014; Sirin, 2005). There have been two major systematic reviews of the literature on SES impact on academic achievement. White (1982) reviewed studies published before 1980 and found varying relationships between SES and academic achievement, largely because of inconsistent measurements of SES and achievement. In a meta-analysis of the empirical research carried out from 1990 to 2000, Sirin (2005) found a medium level of association between SES and academic achievement. When Sirin (2005) replicated White's (1982) methodology, there was a smaller correlation between SES and academic achievement than White (1982) had reported (r = .299, p. 442). Most relevant to the current study, the Sirin (2005) meta-analysis found that family SES at the student level was one of the strongest correlates of academic performance, although correlations at the school level were even stronger. Much of the literature on the school-level impact of SES on academic achievement comes from data that are more than 20 years old (see Palardy, 2013 for an exception). Literature since the Sirin (2005) meta-analysis has largely focused on mediators and moderators of the poverty and achievement relationship, for example, parental involvement (Altschul, 2012); homelessness and high mobility (Herbers et al., 2012), as well as specific indicators of poverty and individual milestones of academic achievement; for example, income impact on brain structures and cognitive functioning (Duncan & Magnuson, 2012; Noble et al., 2015); parental education on cognitive development (Reardon, 2011); neighborhood poverty and academic achievement (Sanbonmatsu, Kling, Duncan, & Brooks-Gunn, 2006; Sharkey & Elwert, 2011); and family income on SAT scores, (Dixon-Román, Everson, & McArdle, 2013). Although SES has many operationalizations, it seems clear that high SES affords children an array of tangible and intangible supports that provide a developmental and lifelong benefit (Bradley & Corwyn, 2002).

Although poverty and race are clearly linked, poverty does not fully explain racial gaps in achievement tests (Myers, Kim, & Mandala, 2004). There are several explanations for this, but for one, poverty for White families tends to be episodic, whereas poverty for Black families tends to be intergenerational, with rare opportunity for mobility (Sharkey, 2012, 2014). Rothstein (2015) suggests that it is not poverty itself, but the host of associated intergenerational social and economic disadvantages that impact student performance. To this, much of the research has focused on the negative impact of segregated schools, and most of those studies have focused at the individual level versus the school level (Kainz & Pan, 2014; Rothstein, 2015). In his review of the literature, Evans (2004) reported on the profound and pervasive social and physical differences between high- and low-income neighborhoods, including that the neighborhoods where poor children live are more hazardous (e.g., greater traffic volume, more crime, less playground safety) and that poor children were more likely to attend schools that are inadequate (Evans, 2004).

When Borman and Dowling (2010) reanalyzed the data from The Equality of Educational Opportunity (EEO) study, the "Coleman report" (Coleman et al., 1966), they found that 40% of the variability in verbal achievement was found to occur between schools with significant evidence suggesting that going to a high-poverty school or a highly segregated Black school had a significant effect on a student's achievement outcomes. These segregation effects were found to be above and beyond the effect of individual poverty or minority status. Today, despite the *Brown* decision (1954), schools in the United States are well entrenched on a path toward resegregation, as both Hispanic and Black students are often found in segregated, high-poverty schools with limited resources (Orfield, 2014). Although substantial numbers of students of all races graduate from high school unprepared academically, this failure is not evenly distributed. Black and Hispanic students have lower average reading, mathematics, and science scores compared with their White peers (Campbell et al., 2001; Campbell, Hambo, & Mazzeo, 1999; Mickelson, Bottia, & Lambert, 2013). A review of studies based on several national datasets found that racial differences in achievement were present in all datasets, with differences ranging from half a standard deviation to more than a full standard deviation (Duncan & Magnuson, 2005). The magnitude of these gaps is found to increase across children's age, exist by age 3, widen through elementary and middle schools, and persist into adulthood (Burchinal et al., 2011; Phillips, Crouse, & Ralph, 1998). Analyses suggest that the dynamic of teaching to the test prevalent in the NCLB era was more easily accomplished in better resourced districts, and likely these trends will continue as we move into the Common Core State Standards era (Jennings & Bearak, 2014).

Finally, Elias, White, and Stepney (2014) examined the contribution of SES and race to standardized test scores in middle schools. Their work derived from a focus on interventions with high-risk middle school youth and the difficulty in obtaining significant impact on students' academics (Stepney, White, Far, & Elias, 2014). As part of these efforts, the amount of variance available in academic achievement tests was evaluated so that it could be accounted for in studies of urban middle school improvement. In a sample of more than 140 middle schools in New Jersey, Elias et al. (2014) found that SES and race each accounted for unique variance in standardized test scores, and the combination was so powerful that it allowed for relatively little variance in scores to be accounted for by interventions typically recommended as a source of school reform strategies. What was not clear from the study was whether there was a developmental trajectory, whereby the influence of SES and race might get stronger over time, from elementary through high school. It was of concern that immutable factors might become progressively more salient to achievement, and therefore contribute to students' failure scripts as they became iterative and self-fulfilling (Ou & Reynolds, 2008). Further, Elias et al. (2014) did not exclude from their sample schools with virtually no racial variability, something that subsequent studies needed to correct.

Current Study

Classroom size, school size, and teacher mobility were reviewed here to provide evidence toward their inclusion in a model in which the goal is to observe the impact of SES and race, over such modifiable variables. This mode of review and analysis reflects a reversal of how such studies are traditionally conducted, where SES and race are controlled for while the relative impact of modifiable factors on outcomes are assessed. Although this traditional methodology is more acceptable when targeting school-level factors within the control of policymakers, as reviewed, research suggests that school-level SES and race may continue to account for a substantial portion of the achievement gap. Thus, our goal is to evaluate whether efforts to improve the achievement gap via testing have done so, or simply continued to measure the impact of immutable factors on achievement. The purpose of this study is to elucidate whether the relationship between mutable school-level characteristics and school-level academic achievement is of such a magnitude that it represents a viable strategy for improving educational equity. If the premises behind the No Child Left Behind Act are well founded, then a school's percentage of students showing proficiency on a standardized achievement test should be more impacted by mutable factors such as the school's size, average classroom size and teacher mobility than by the socioeconomic and racial make-up of the school. However, it is our contention that SES and race exercise a primary influence on test-based academic performance indicators, to the point where gains fostered by other predictive school-level factors of class size, school size, and teacher mobility are not capable of closing the achievement gap. This question has particular relevance to the newly designed test regimens accompanying the Common Core State Standards and the ability of poor and Black and Hispanic children to be seen as academically competent. Our present focus will be on English language arts and mathematics achievement as those are the primary venues of evaluation in such achievement testing (Common Core State Standards Initiative, 2010a, 2010b).

Method

Setting and Participants

The current study utilizes the school as the unit of analysis, thus all factors examined are at the school level rather than the individual level, following the NCLB practice of evaluating schools. Schools were included in the study if they met grade inclusionary criteria and were not missing any of our variables of interest (see Measures below). The grade criteria were having either a 3rd grade (n = 229; hereafter referred to as elementary schools), an 8th grade (n = 139; referred to as middle school), or an 11th grade (n = 84; referred to as high school), but not two of these. Schools were excluded if they had overlapping grades (i.e., a K–8 school would not have been included because it contains both a 3rd and 8th grade). The elementary schools generally contained Grades K–5, the middle schools 6–8, and the high schools almost always were Grades 9–12. Finally, schools with a racial make-up of 0% for White, Black, or Hispanic student population were excluded from the analyses. Data presented here from the middle school cohort were reanalyzed from Elias et al. (2014), with the exclusion of schools with a virtual 100% single race racial make-up; those exclusion criteria were also used for elementary and high schools, allowing all data to have a common analytic framework.

Measures

All variables came from two publically available data sources: (a) The New Jersey Department of Education (NJDOE) School Report Cards online database (State of New Jersey Department of Education, 2010) or (b) the Institute of Education Sciences (IES) of the National Center for Education Statistics (NCES) public school online database (National Center for Education Statistics, 2010).

NJDOE variables. NJDOE variables included and analyzed for this study were total enrollment of students, average class size, faculty mobility rate, and standardized achievement tests.

Total enrollment. School enrollment numbers are based on the official enrollment count on October 15, 2009.

Average class size. Class size is not the pupil/teacher ratio. The calculation of a pupil/teacher ratio typically includes teachers who spend all or part of their day in roles outside the classroom (Ehrenberg et al., 2001). Thus, pupil/teacher ratio is a global measure of the human resources brought to bear, directly and indirectly, on children's learning. Class size, conversely, refers to the actual number of pupils taught by a teacher at a particular time. For this study, for elementary and middle schools, the average class size is the total enrollment for that grade divided by the total number of classrooms for that grade. For high schools, the average class size is the total enrollment for that grade divided by the total number of English classes for that grade. This distinction represents the best estimation of class size as the majority of students in high school are required to take an English language arts course, and as such, is how the NJDOE has determined to calculate average class size (State of New Jersey Department of Education, 2010)

Faculty mobility rate. The faculty mobility rate utilized here is a percentage that indicates faculty hiring and turnover during the academic year. It is determined by calculating the total number of faculty who entered or left employment after October 15, 2009, and then divided by the total number of faculty. As noted by Ronfeldt et al. (2013) this approach to calculating mobility rate is equivalent to those including lagged attrition and also follows the common practice of not counting within-school mobility, in that the faculty member is still available to the same school.

Standardized achievement tests. In the 3rd and 8th grades, public school students in New Jersey take the NJ Assessment of Skills and Knowledge (NJASK). For the NJASK, although the testing is required of schools, students may opt out and it is a local school decision whether that results in an excused or unexcused absence. The scoring scale for all grade tests is 100 to 300. Students achieving a score of 200 are deemed proficient; students achieving a score of 250 or greater are deemed advanced proficient. In the 11th grade, students take the High School Proficiency Assessment (HSPA). Students must pass the HSPA if they are to graduate from high school and students have three opportunities to pass the test. HSPA scores are reported as scale scores in each content area. The scores range from 100 to 199 (Partially Proficient), 200 to 249 (Proficient), and 250 to 300 (Advanced Proficient). The scores of students at the Partially Proficient level are considered to be below the state minimum of proficiency. The National Assessment of Educational Progress (NAEP) has been described as a "gold standard" for monitoring the educational progress of American students (Jones, Olkin, & American Educational Research Association, 2004) and although the NAEP and the New Jersey state assessments differ in some of the content and how skills are measured, as well as the method used for setting performance standards (i.e., the cut points for determining achievement levels) generally, a New Jersey state rating of "proficient" is comparable with a NAEP "basic" rating which denotes partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade (U.S. Department of Education, Institute of Education Sciences, & National Center for Education Statistics, 2010). English Language Arts tests consist of reading passages, multiple-choice items, constructed-response items, and writing tasks. Mathematics tests consist of multiple-choice, as well as short and extended constructed-response items. The NJ ASK and HSPA are designed to optimize scale score test–retest reliability and have been found to have reliability ranging from .71 to .89. For the current study, we focused on the English language and Math components of these tests as these are considered key markers of academic success, and thus the primary focus of achievement measurement (Common Core State Standards Initiative, 2010a, 2010b; No Child Left Behind [NCLB], 2002). All were given in or around April through May of 2010.

While these tests produce scaled scores, we chose to analyze the percentage of students who were proficient or advanced proficient for each of the two subject areas. The proficient criterion was used because (a) these qualitative labels are used to determine accolades and sanctions by the public and the government, (b) the scaled scores are not comparable across grade levels, and (c) the scaled scores are unavailable at the school level.

NCES variables. NCES variables included and analyzed for this study were free and reduced lunch status, race/ethnicity proportions, and male/female proportions for each school.

Free or reduced lunch status. The percentage of students eligible for the free or reduced-price lunch program is determined by federal guidelines put forth by the National School Lunch Act. Students qualify for a free lunch if their family household income is at or below 130% of the Federal income poverty line and for a reduced lunch if it is at or below 185% of the poverty line. In 2009, the federal poverty guideline was $18,310 for a family of three and $22,050 for a family of four (Food and Nutrition Service USDA, 2009). The percentage of students eligible for the free or reduced-price lunch is used here as a proxy for socioeconomic status as it has been found to have a relationship to other measures of child socioeconomic status and to have low rates of missing data. Thus, it is a convenient, if inexact, measure of family income for low-income child populations when other data is unavailable (Vanfossen, Brown, Kellam, Sokoloff, & Doering, 2010).

Race/ethnicity. The percentage of students of each major racial/ethnic group was provided for each school. Because of federal rules, students who selected Hispanic were counted only as Hispanic, even if they checked other race/ethnicity options. We used the NCES race/ethnicity percentages to calculate the percentage of students who were Black or Hispanic at the school as these two groups experience an achievement gap compared to White students on standardized achievement tests (Perie, Moran, & Lutkus, 2005). Students of other racial backgrounds were not enrolled in high enough numbers to perform meaningful comparisons across schools.

Male/Female. The percentage of female students was calculated by dividing the number of female students by the total number of students.

Data Analysis

All data were downloaded from the publically available New Jersey Department of Education (NJDOE) School Report Cards online database (State of New Jersey Department of Education, 2010) or the Institute of Education Sciences (IES) of the National Center for Education Statistics (NCES) public school online database (National Center for Education Statistics, 2010) for the school year 2009–2010. Schools were included in the study if they met grade inclusionary criteria and were not missing any of our variables of interest.

To test the hypothesis that the percentage of students in a school who are at the proficient or advanced proficient level on the NJ state language and math tests is a function of the percentage of Black and Hispanic students after controlling for other school demographic factors, a hierarchical regression analysis was performed for each school type. All predictor variables were centered by grade level to reduce multicollinearity. Data were analyzed using SPSS version 22.

Results

School Demographics

Demographic characteristics by school type, including total enrollment, average class size, rate of faculty mobility, percentage of students receiving free or reduced lunch, percentage of female students, and racial/ethnic percentages are shown in Table 1. Analysis of Variance tests were performed to test for differences across school types on these demographic variables, and results indicated that there were significant differences between school types in their average total enrollment, $F(2, 449) = 245.99$, $p < .001$, class size, $F(2, 449) = 6.26$, $p = .002$, and percentage of Asian students, $F(2, 449) = 4.41$, $p = .033$. Bonferroni post hoc comparisons revealed that there were significant differences between all three school types on the total enrollment ($p < .001$ for all pairwise comparisons), with high schools having significantly greater total enrollment, followed by middle schools and then elementary schools, on average. The average class size for high schools was significantly less than either elementary schools ($p = .017$) or middle schools ($p = .002$); however, this significance represents only an approximate one student difference.

Correlations

Pearson's r correlations were calculated for all study variables by school type, with all variables centered to reduce multicollinearity. The data are reported only for the high school level as the patterns were virtually identical across school level (see Table 2). Percent proficient and advanced proficient on the language achievement tests was significantly and highly correlated with percent proficient and advanced proficient on the math achievement test, $r = .94$, $p < .001$. Additionally, the percentage of Black students in schools was significantly and negatively correlated to the percentage of students who were at the proficient or advanced proficient level on both the language, $r = -0.69$, $p < .001$ and math achievement tests, $r = -0.72$, $p < .001$. Similarly, there were significant negative correlations between the percentage of Hispanic students and school language, $r = -0.61$, $p < .001$, and math proficiency, $r = -0.65$, $p < .001$. The percentage of students receiving free or reduced lunch was also significantly related to a number of school factors, including average class size, $r = -0.46$, $p < .001$, faculty mobility, $r = .24$, $p = .029$, percent Black, $r = .68$, $p < .001$, percent Hispanic, $r = .75$, $p < .001$, and state language, $r = -0.81$, $p < .001$, and math achievement tests, $r = -0.87$, $p < .001$.

Hierarchical Regression Analysis Predicting School Language Proficiency

To test the hypothesis that the percentage of students in a school who are at the proficient or advanced proficient level on the NJ

Table 1. *School Demographic Factors by School Type*

Demographic	Elementary school ($n = 229$) *M*	*SD*	Range	Middle school ($n = 139$) *M*	*SD*	Range	High school ($n = 84$) *M*	*SD*	Range	*F*
Total enrollment	465.90[a]	147.84	165–938	709.30[a]	292.17	203–1879	1242.67[a]	455.03	465–2387	245.99***
Average class size	19.19[b]	2.70	4.10–25.90	19.58[b]	3.74	6.30–27.40	18.10[b]	2.82	9.30–23.20	6.26**
Faculty mobility	4.57	6.92	.00–61.50	4.92	10.69	.00–109.40	3.40	4.33	.00–16.90	1.00
% Free or reduced lunch	24.04	24.59	.00–97.19	23.64	22.16	.00–86.42	22.83	20.27	.05–82.22	.09
% Female	48.31	2.63	40.14–55.41	48.50	2.41	41.67–55.46	48.81	2.02	40.87–54.14	1.29
% White	58.73	26.89	.60–95.82	60.92	26.47	.58–94.30	59.17	26.26	.53–92.48	.30
% Black	12.28	16.43	.50–86.32	13.03	16.50	.55–89.77	14.47	16.86	.65–70.24	.55
% Hispanic	15.12	15.54	.50–91.86	15.97	17.75	1.52–95.55	16.55	16.05	2.07–62.46	.28
% Asian	12.19[c]	13.45	.00–74.47	9.01[c]	9.55	.00–44.96	8.85	8.82	.21–40.18	4.41*
% Proficient and advanced proficient on language	66.29	15.33	17.90–98.80	85.97	12.24	23.90–100.00	88.42	11.26	31.70–98.90	—
% Proficient and advanced proficient on math	83.67	12.36	24.80–100.00	72.57	14.88	13.10–97.60	75.72	16.71	11.20–96.30	—

[a] Bonferroni post hoc comparisons revealed a significant differences on total school enrollment between all school types ($p < .001$). [b] Bonferroni post hoc comparisons revealed a significant difference on average class size between elementary schools ($p = .017$) and middle schools ($p = .002$) from high schools; there was not a significant difference when comparing elementary schools to middle schools ($p = .65$). [c] Bonferroni post hoc comparisons revealed a significant difference between elementary schools and middle schools the average percentage of Asian students ($p = .033$).
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. *Correlation Matrix of Study Variables for High Schools (n = 84)*

Variable	1	2	3	4	5	6	7	8
1. Total enrollment	—							
2. Average class size	.26*	—						
3. Faculty mobility	.01	−.12	—					
4. % Free or reduced lunch	−.16	−.46***	.24*	—				
5. % Female	.10	.32**	−.11	−.34**	—			
6. % Black	.13	−.25*	.10	.68***	−.12	—		
7. % Hispanic	−.08	−.42***	.21†	.75***	−.44***	.28**	—	
8. % Proficient and advanced proficient on language	.10	.40**	−.25*	−.81***	.32***	−.69***	−.61***	—
9. % Proficient and advanced proficient on math	.15	.42**	−.16	−.87***	.32***	−.72***	−.65***	.94***

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

state language tests is influenced by the percentage of Black and Hispanic students after controlling for other school demographic factors, a hierarchical regression analysis was performed for each school type. Percent female, faculty mobility, total enrollment, and average class size were entered first, followed by the percentage of students receiving free or reduced lunch, and then the percentage of Black students and the percentage of Hispanic students, independently; in the last step, interaction terms for percentage of students receiving free or reduced lunch by each of the two racial/ethnic groups were entered to help determine whether the relationship between race and test scores is moderated by SES. The same sequence for entering predictor variables was used for each school type. All continuous predictor variables were centered to reduce multicollinearity for hierarchical regression. All percent variables were coded on a 0.00 to 100.00% scale so a one unit change on any of the predictor variables reflects a one unit change in the percentage of students in a school who are at the proficient or advanced proficient level on the language test.

Elementary schools. For elementary schools (see Table 3), the school demographic factors in Step 1 accounted for 8% of the variance in language test proficiency. The inclusion of free or reduced lunch status in Step 2 accounted for a further 41% of the variance in language test proficiency. The addition of the percent of Black and Hispanic students in Step 3 did not significantly improve the prediction for elementary schools (R^2 change = 0.007, $F = 1.61$, $p = .20$). However, the inclusion of the interaction between race and SES, specifically the term for Hispanic students, significantly accounted for an additional 2% of the variance in language test scores (R^2 change = 0.03, $F = 7.46$, $p = .001$), for a total overall variance explained of 53%.

Notably, the unstandardized b coefficient for percent free or reduced lunch in the final model was statistically significant (unstandardized $b = -0.52$, $p < .001$). This indicates that on average for every 1% increase in the school population receiving free or reduced lunch, there is a corresponding 0.52% decrease in students meeting the proficiency for Language, after holding all other factors constant. In other words, this means that every 10% increase in free or reduced lunch students in a school is associated with an approximate 5% decrease in proficiency in Language. Additionally, there was a significant interaction between the percentage of Hispanic students and SES ($b = .006$, $p = .001$). Thus,

Table 3. *Summary of Hierarchical Regression Analysis Predicting School Language Proficiency for Elementary Schools (n = 229)*

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	66.26***	.98		66.23***	.73		66.25***	.73		63.92***	.97	
% Female	.47	.37	.08	.20	.28	.04	.24	.28	.04	.16	.28	.03
Faculty mobility	.10	.14	.05	.01	.11	.003	.02	.11	.01	.01	.10	.004
Total enrollment	−.003	.01	−.01	.001	.01	.01	.001	.01	.01	.00	.01	.003
Average class size	1.45***	.38	.26	.32	.29	.06	.28	.30	.05	.50†	.30	.10
% Free or reduced lunch				−.42***	.03	−.68	−.49***	.07	−.78	−.52***	.07	−.83
% Black							.004	.07	.01	−.01	.08	−.02
% Hispanic							.14	.09	.14	−.03	.10	−.03
% Black × % Free or reduced lunch										.002	.002	.09
% Hispanic × % Free or reduced lunch										.006**	.002	.26
R^2		.08			.49			.50			.53	
Change in R^2		.08			.41			.007			.03	
F for R^2 change		4.81**			178.71***			1.61			7.46**	

Note. All predictor variables are centered.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

it appears that the relationship between the percentage of Hispanic students and language test proficiency is moderated by SES in elementary schools, whereby there is a negative relationship between percent Hispanic and language proficiency, but only in schools that have a low percentage of students receiving free or reduced lunch (see Figure 1).

Middle schools. Results for the middle school level in the current study mirror results previously reported in the Elias et al. (2014) study. In middle schools (see Table 4), the basic school demographic factors in Step 1 accounted for 15% of the variance in language proficiency. SES added an additional 57% of variance explained in Step 2 ($F = 275.55$, $p < .001$). Unlike in elementary schools, in middle schools taking into account the percentage of Black and Hispanic students significantly improved the prediction of school language proficiency. The addition of percent Black and Hispanic students in Step 3 increased the variance explained from 72% to 78%, $F = 17.52$, $p < .001$. Furthermore, the addition of the interaction between race and SES increased the variance explained by an additional 4%, $F = 13.85$, $p < .001$.

In the final model for middle schools, the faculty mobility rate ($b = -0.12$, $p = .008$), the percentage of students receiving free or reduced lunch ($b = -0.17$, $p = .001$), the percentage of Hispanic students ($b = -0.14$, $p = .003$), and the percentage of Black students ($b = -0.27$, $p < .001$) were all significant predictors of language proficiency, holding all else constant. Specifically looking at the impact of race, with every 10% increase in the percentage of Hispanic or Black students in a school on average there is a 1.4% or 2.7% decrease in the percentage of students who are proficient on the language test, respectively. In addition, the interaction between the percentage of Black students and free/reduced lunch status was significant ($b = -0.01$, $p < .001$), suggesting that the relationship between the percentage of Black students and language test proficiency is significantly and negatively moderated by the percentage of students receiving free or reduced lunch. The higher the percentage of students receiving free or reduced lunch in a school, the more negative the relationship (or slope) between the percentage of Black students and language proficiency (see Figure 2). In other words, results demonstrated that overall schools with a higher percentage of Black students are predicted to have a lower percentage of students who tested at the proficient or advanced proficient level on average, and this negative relationship was stronger in schools with a higher percentage of low SES students (i.e., a higher percentage of students receiving free or reduced lunch). The interaction between the percentage of Hispanic students by free/reduced lunch status was not significant.

High schools. The model for the high schools (see Table 5) largely mirrored the middle school results, with the addition of SES, then race, and then their interaction in subsequent steps increasing the overall variance explained. The total overall variance explained by the model was 75%. Similar to the middle school, in the final model, the percentage of students receiving free or reduced lunch ($b = -0.17$, $p = .040$), the percentage of Hispanic students ($b = -0.19$, $p = .008$), and the percentage of Black students ($b = -0.19$, $p = .026$) were significant predictors of proficiency on the high school language standardized test, when holding all other predictors constant. Unlike the middle school, the faculty mobility rate ($b = -0.18$, $p = .275$) was not a significant predictor in the final model. In addition, SES continued to be a significant moderator of the relationship between the percentage of Black students and language test proficiency in high schools ($b = -0.01$, $p = .002$), with the negative relationship between the percent of Black students and language proficiency being most evident in schools with a high percentage of students receiving free or reduced lunch (see Figure 3). SES did not significantly moderate the relationship between percent Hispanic and language proficiency.

Overall, these findings suggest that both race and SES, as well as their interaction, play an increasingly larger role in school-level language proficiency, so that, when a high school's testing outcomes are evaluated, these factors account for 67% of the variance.

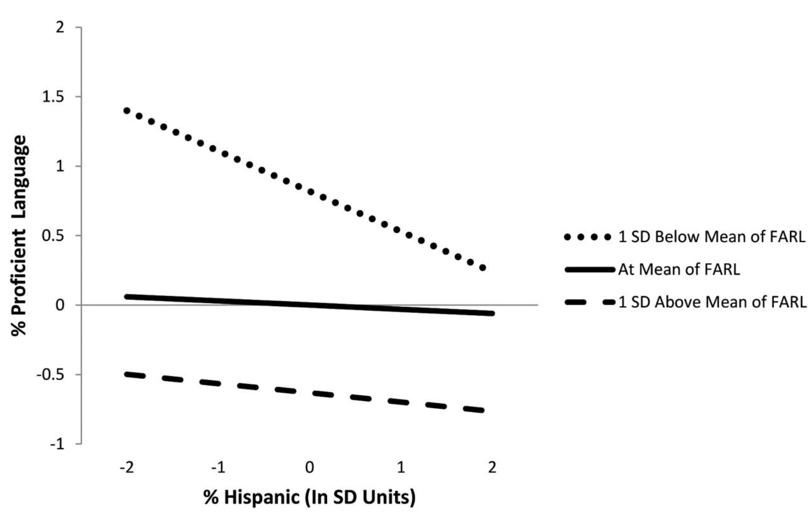

Figure 1. Interaction between percentage of Hispanic students and percentage of students receiving free and reduced lunch (FARL) as predictors of the percentage of students at the proficient or advanced proficient level on the standardized language test in elementary schools ($n = 229$).

Table 4. *Summary of Hierarchical Regression Analysis Predicting School Language Proficiency for Middle Schools (n = 139)*

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	85.88***	.97		85.61***	.56		85.55***	.50		87.52***	.66	
% Female	.52	.42	.10	.04	.24	.008	.07	.22	.01	.04	.20	.008
Faculty mobility	−.18†	.09	−.16	−.17**	.05	−.15	−.17**	.05	−.15	−.12**	.05	−.11
Total enrollment	.00	.003	.01	−.002	.002	−.04	.00	.002	−.006	−.002	.002	−.04
Average class size	1.09***	.26	.33	.06	.16	.02	.14	.15	.04	.11	.14	.03
% Free or reduced lunch				−.46***	.03	−.83	−.20***	.05	−.36	−.17**	.05	−.30
% Black							−.23***	.04	−.31	−.14**	.05	−.18
% Hispanic							−.25***	.05	−.36	−.27***	.07	−.39
% Black × % Free or reduced lunch										−.01***	.001	−.25
% Hispanic × % Free or reduced lunch										−.001	.002	−.05
R^2		.15			.72			.78			.82	
Change in R^2		.15			.57			.06			.04	
F for R^2 change		6.11***			275.15***			17.52***			13.85***	

Note. All predictor variables are centered.
† $p < .10$. ** $p < .01$. *** $p < .001$.

Hierarchical Regression Analysis Predicting School Math Proficiency

Results for math proficiency are displayed in Tables 6 through 8 by school level. Similar to the language proficiency results, the addition of the percentage of Black and Hispanic students in the school added significant variance explained for the middle school and high school models, but not for the elementary school model. Unlike the language models, however, there were no significant interactions between SES and race/ethnicity for the higher grade levels. Overall, these findings suggest that as students' progress from elementary through high school, both race and SES have an increasing impact on academic proficiency, but that the relationship between race and proficiency is only moderated by SES for language scores.

Discussion

The current study sought to appraise the impact of the immutable factors of racial make-up and socioeconomic status, traditionally controlled for in analyses of school-level academic achievement, over the modifiable and frequently targeted factors of classroom size, school size and teacher mobility. It was the contention of this study that, if education reform, particularly the No Child Left Behind Act, has had any success in addressing

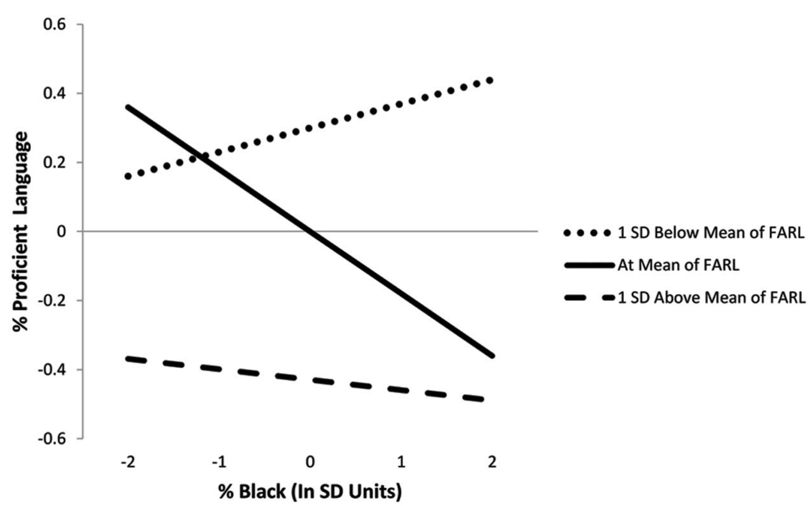

Figure 2. Interaction between percentage of Black students and percentage of students receiving free and reduced lunch (FARL) as predictors of the percentage of students at the proficient or advanced proficient level on the standardized language test in middle schools ($n = 139$).

Table 5. *Summary of Hierarchical Regression Analysis Predicting School Language Proficiency for High Schools (n = 84)*

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	88.23***	1.11		88.02***	.74		87.61***	.70		89.19***	.94	
% Female	1.12	.58	.20	.29	.40	.05	.31	.39	.06	.55	.38	.10
Faculty mobility	−.48†	.26	−.19	−.14	.18	−.05	−.20	.17	−.08	−.18	.16	−.07
Total enrollment	.00†	.003	.01	−.001	.002	−.03	.002	.002	.08	.002	.002	.08
Average class size	1.22**	.43	.31	.08	.31	.02	.01	.29	.003	−.07	.28	−.02
% Free or reduced lunch				−.43***	.04	−.77	−.19*	.08	−.35	−.17*	.08	−.30
% Black							−.26***	.07	−.39	−.19**	.07	−.29
% Hispanic							−.14†	.08	−.19	−.19*	.09	−.27
% Black × % Free or reduced lunch										−.01**	.002	−.25
% Hispanic × % Free or reduced lunch										.002	.002	.07
R^2		.23			.66			.71			.75	
Change in R^2		.23			.43			.05			.04	
F for R^2 change		5.94**			98.37***			7.14**			5.35**	

Note. All predictor variables are centered.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

the systemic issues of race and SES identified by the 1966 Coleman report (Coleman et al., 1966), then a school's percentage of students showing proficiency on a standardized achievement test should be more impacted by mutable factors such as the school's size, average classroom size, and teacher mobility than by the socioeconomic and racial make-up of the school. However, consistent with our hypotheses, we found that SES and race exercise a primary influence on test-based academic performance indicators, to the point where changes in other school level predictive factors would not result in significant closing the achievement gap. These findings are consistent with prior research (Palardy, 2013; Sirin, 2005), and suggest that race/ethnicity and SES accounts for a significant and meaningful amount of variance in students' test scores, and that this impact appears to increase over the grade levels. The independent significance of race however is an additionally notable finding as it was over and above a highly significant amount accounted for by school demographic factors and SES. The relationship between race/ethnicity and students' test scores seemed to be most pronounced for older students, so that in evaluating a school's 11th grade test scores, this factor accounts for 5% of the variance in language and math test scores.

Additionally, results of this study indicated that SES impacted the relationship between race and test scores. This interaction between race and SES gains significance by older grades, representing a medium effect size increment in Language and a small effect size increment in Math. These findings suggest that there are mechanisms at work that compound the negative relationship between race, SES, and academic test scores. To this, it is impor-

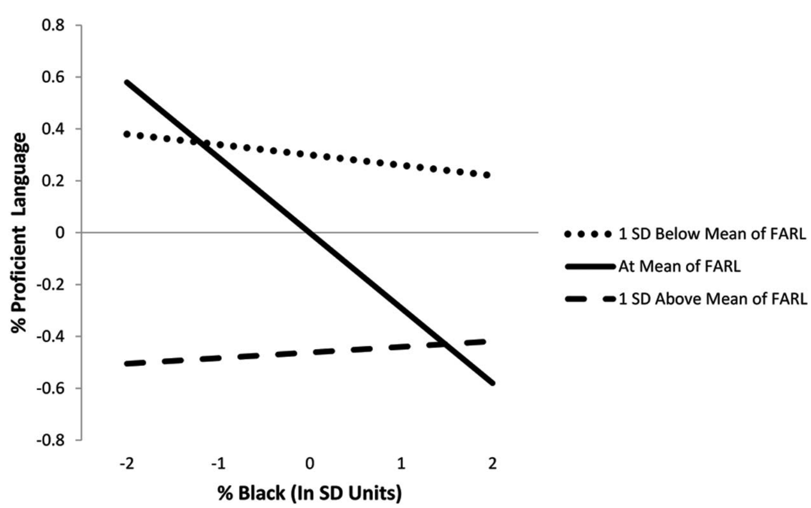

Figure 3. Interaction between percentage of Black students and percentage of students receiving free and reduced lunch (FARL) as predictors of the percentage of students at the proficient or advanced proficient level on the standardized language test in high schools (n = 84).

Table 6. *Summary of Hierarchical Regression Analysis Predicting School Math Proficiency for Elementary Schools (n = 229)*

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	83.70***	.79		83.67***	.61		83.66***	.61		82.94***	.82	
% Female	.27	.30	.06	.07	.23	.02	.11	.23	.02	.10	.24	.02
Faculty mobility	.15	.11	.08	.08	.09	.04	.07	.09	.04	.07	.09	.04
Total enrollment	−.01	.01	−.09	−.006	.004	−.07	−.01	.004	−.07	−.01	.004	−.08
Average class size	1.29***	.30	.28	.43†	.24	.09	.46†	.25	.10	.51*	.25	.11
% Free or reduced lunch				−.32***	.03	−.64	−.28***	.06	−.56	−.28***	.06	−.57
% Black							−.09	.06	−.12	−.06	.07	−.08
% Hispanic							.00	.07	.00	−.10	.09	−.12
% Black × % Free or reduced lunch										.00	.002	−.02
% Hispanic × % Free or reduced lunch										.003†	.001	.13
R^2		.10			.46			.47			.48	
Change in R^2		.10			.36			.01			.01	
F for R^2 change		5.89***			150.80***			1.65			1.92	

Note. All predictor variables are centered.
† $p < .10$. * $p < .05$. *** $p < .001$.

tant to note that race/ethnicity, without SES interaction, for both math and language proficiency did not become significant until middle school. And while elementary school test scores were significantly affected by percent Free or Reduced Lunch, this effect was more significant in language than math. However, by high school, the impact of the racial make-up of the school became highly significant. Additionally, for middle schools and high schools, SES was only a significant moderator between race/ethnicity and test proficiency when looking at the percentage of Black students in school, and generally not with Hispanic students. This suggests that a low-income school with a high population of Black students may be the most disadvantaged, aligning with the perspective of Ronfeldt et al. (2013). These findings make clear that students in such schools continue to experience an especially challenging educational climate with regards to school testing outcomes.

The achievement gap in American schools is well-documented. Although it can sometimes be defined as a "Black–White" gap, or a "Black/Hispanic–Caucasian" gap, it can, and has, also been defined as a poverty-related gap. In studies that have explored this gap from a wider perspective, the defining feature found is typically the socioeconomic resources of those communities (Rothstein, 2004; Rumberger & Palardy, 2005), particularly as they relate to resegreation (Jackson, 2009; Sharkey, 2012, 2014; Sharkey & Elwert, 2011). The relationship between socioeconomic status and race is frequently found to be interrelated, as Black and Hispanic students are often found in segregated, high-poverty schools with limited resources (Orfield, 2014). Indeed, previous studies have found that, at the

Table 7. *Summary of Hierarchical Regression Analysis Predicting School Math Proficiency for Middle Schools (n = 139)*

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	72.47***	1.18		72.17***	.78		71.93***	.69		72.87***	1.00	
% Female	.32	.51	.05	−.22	.34	−.04	−.09	.30	−.02	−.11	.30	−.02
Faculty mobility	−.21†	.11	−.15	−.20**	.08	−.15	−.21**	.07	−.15	−.18**	.07	−.13
Total enrollment	−.001	.004	−.02	−.003	.003	−.07	−.001	.002	−.02	−.002	.002	−.04
Average class size	1.37***	.32	.35	.22	.23	.06	.22	.21	.06	.20	.21	.05
% Free or reduced lunch				−.52***	.04	−.77	−.18*	.07	−.27	−.16*	.07	−.24
% Black							−.38***	.06	−.42	−.33***	.07	−.37
% Hispanic							−.26***	.07	−.31	−.28**	.11	−.34
% Black × % Free or reduced lunch										−.004	.002	−.11
% Hispanic × % Free or reduced lunch										.00	.002	−.01
R^2		.15			.63			.72			.73	
Change in R^2		.15			.48			.09			.01	
F for R^2 change		5.79***			173.61***			20.55***			1.52	

Note. All predictor variables are centered.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 8. *Summary of Hierarchical Regression Analysis Predicting School Math Proficiency for High Schools (n = 84)*

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Constant	75.47***	1.64		75.13***	.92		74.56***	.85		75.81***	1.19	
% Female	1.66†	.87	.20	.28	.50	.03	.31	.47	.04	.44	.48	.05
Faculty mobility	−.38	.39	−.10	.19	.22	.05	.09	.20	.03	.13	.20	.03
Total enrollment	.001	.004	.04	.00	.002	.002	.004†	.002	.10	.004†	.002	.10
Average class size	1.99**	.64	.34	.11	.39	.02	.01	.35	.002	−.04	.35	−.01
% Free or reduced lunch				−.71***	.05	−.86	−.37**	.10	−.45	−.35**	.10	−.43
% Black							−.37***	.08	−.37	−.33***	.09	−.33
% Hispanic							−.20*	.10	−.19	−.22*	.11	−.21
% Black × % Free or reduced lunch										−.01	.003	−.11
% Hispanic × % Free or reduced lunch										.00	.003	.01
R^2		.23			.76			.81			.82	
Change in R^2		.23			.53			.05			.008	
F for R^2 change		5.88***			173.37***			9.66***			1.59	

Note. All predictor variables are centered.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

school-level, the diversity of a school or lack thereof can play a significant part in predicting academic achievement and other measures of student performance (Clayton, 2011). The impact of racially segregated schools cannot be overstated. Even when controlling for student characteristics and school-wide poverty, economically disadvantaged students in segregated schools face gaps in reading development when compared to economically disadvantaged students in nonsegregated schools (Kainz & Pan, 2014; Kainz & Vernon-Feagans, 2007). Further, there is evidence that both racial and economic segregation are on the rise for Black and Hispanic students. Suburban Black and Hispanic students attend schools with greater than 70% non-White peers while in cities nearly 90% of these students' peers are non-White, rates that covary significantly with poverty (Orfield & Frankenberg, 2014)

The findings from the current study can be situated within the literature of statewide studies of the effects of school racial and SES composition on academic achievement (Borman et al., 2004; Hanushek, Kain, & Rivkin, 2004; Southworth, 2010). However, the current findings additionally suggest that for schools with a large minority population, the impact of race and the interaction between race and SES on academic achievement go beyond the impact of SES alone (Orfield, 2014; Prier, 2014). Our findings indicate that the impact of these factors increases with grade level, which suggests that a compounding effect may be occurring. By high school, 52% of the variance in Language and 59% in Math test scores can be accounted for by SES and racial factors. At this level, a 1% increase in school minority population corresponds to a 0.19 decrease in percent Language proficient and 0.33 decrease for Math. Further, given that by high school, nonindividual level factors account for more than 80% of the variance of a school's test scores, questions about what these tests are measuring should be raised.

Study Limitations

The current study was limited in that it only utilized data from one academic year and only within the State of New Jersey. Future research is needed to explore the longitudinal impact as well as whether the results found represent a national reality. Specific limitations include the question as to whether the sample schools used in the current study may vary from the whole population of schools within New Jersey as the current data were derived from a convenience sample. Although we do not suspect significant, systematic differences, future studies should endeavor to asses all schools within the State of New Jersey. Additionally, a major finding of this study, that the negative impact of the socioeconomic and racial make-up of a school appears to increase by grade level, is limited by the cross sectional nature of the data. A longitudinal analysis would offer clarification as to the nature of this finding; however, such a study would require multiple years of consistent, comparable, achievement testing material. With the introduction of the Common Core, and the need to evaluate and refine these tests, such longitudinal analyses may prove extremely difficult to conduct. Finally, the data were necessarily limited by what was publically available, and therein only for the school level. Future analyses would provide strength to the implications of this study in using more demographic data and greater multilevel analysis, with student-level data.

Study Implications

This study's findings have implications for both policy and intervention. In terms of policy, the results of this study—in conjunction with the previous findings regarding the impact of race and SES on academic test scores—demonstrate the need to reevaluate the role of high stakes testing as well as the structure of the tests themselves (Jennings & Bearak, 2014). The likelihood of schools with significant percentages of Hispanic and/or Black students being able to change their academic status in the short term in any stable way is low. For these schools, perhaps testing once in three or four years would be a better policy. Our results have significant implications as they suggest that school-level interventions to improve academic achievement scores will be stymied by socioeconomic and racial factors, and that efforts to improve the achievement gap via testing have largely measured it. Although extraordinary efforts must continue on the part of educators to prepare children equally for the tests of life, it is essential for second-order change to address the problem at its appropriate ecological level, that is, macrosystemic, not the level of individual schools and children (Kloos et al., 2012). These results should make us question not only why we test, but what we intend to do about the continued presence of findings regarding the negative impact of SES and race/ethnicity. Such findings are particularly salient in the context of efforts to teach and evaluate students and schools in connection to The Common Core—in the race to the top, historical privilege and segregation (as well as continuing resegregation) means individuals and institutions start point may be lower, and their gains slower.

For a nation that prides itself on education, the continued existence of the achievement gap is both an embarrassment and an incongruity. The No Child Left Behind legislation, which heralded a very strict regimen of academic testing and focus on language arts and mathematics, has not led to the expected levels of success (Elias, 2009). Ultimately, education policy including the new Common Core Standards should work to achieve equality of resources and expectations at all schools. Finally, we must encourage a measure of socioeconomic and racial integration before imposing high stakes testing that largely measures race, SES, and their interaction.

Keywords: academic achievement; equal education; race; socioeconomic status

References

Altschul, I. (2012). Linking socioeconomic status to the academic achievement of Mexican American youth through parent involvement in education. *Journal of the Society for Social Work and Research, 3,* 13–30. http://dx.doi.org/10.5243/jsswr.2012.2

Barnes, G., Crowe, E., & Schaefer, B. (2007). *The cost of teacher turnover in five school districts: A pilot study*. Washington, DC: National Commission on Teaching and America's Future.

Bickel, R., & Howley, C. (2000). The influence of scale on school performance: A multi-level extension of the Matthew Principle. *Education Policy Analysis Archives, 8,* 1–32.

Blatchford, P., Moriarty, V., Edmonds, S., & Martin, C. (2002). Relationships between class size and teaching: A multi-method analysis of English infant schools. *American Educational Research Journal, 39,* 101–132. http://dx.doi.org/10.3102/00028312039001101

Blatchford, P., Russell, A., Bassett, P., Brown, P., & Martin, C. (2007). The effect of class size on the teaching of pupils aged 7–11 years. *School Effectiveness and School Improvement, 18,* 147–172. http://dx.doi.org/10.1080/09243450601058675

Borman, G., & Dowling, M. (2010). Schools and inequality: A multilevel analysis of Coleman's Equality of Educational Opportunity data. *Teachers College Record, 112,* 1201–1246.

Borman, G. D., & Dowling, N. M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research, 78,* 367–409. http://dx.doi.org/10.3102/0034654308321455

Borman, K. M., Eitle, T. M., Michael, D., Eitle, D. J., Lee, R., Johnson, L., . . . Shircliffe, B. (2004). Accountability in a postdesegregation era: The continuing significance of racial segregation in Florida's schools. *American Educational Research Journal, 41,* 605–631. http://dx.doi.org/10.3102/00028312041003605

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53,* 371–399. http://dx.doi.org/10.1146/annurev.psych.53.100901.135233

Burchinal, M., McCartney, K., Steinberg, L., Crosnoe, R., Friedman, S. L., McLoyd, V., . . . the NICHD Early Child Care Research Network. (2011). Examining the Black-White achievement gap among low-income children using the NICHD study of early child care and youth development. *Child Development, 82,* 1404–1420. http://dx.doi.org/10.1111/j.1467-8624.2011.01620.x

Campbell, F. A., Pungello, E. P., Miller-Johnson, S., Burchinal, M., & Ramey, C. T. (2001). The development of cognitive and academic abilities: Growth curves from an early childhood educational experiment. *Developmental Psychology, 37,* 231–242. http://dx.doi.org/10.1037/0012-1649.37.2.231

Campbell, J. R., Hambo, C. M., & Mazzeo, J. (1999). *NAEP 1999 trends in academic progress: Three decades of student performance*. Washington, DC: National Center for Education Statistics.

Clayton, J. K. (2011). Changing diversity in U.S. schools: The impact on elementary student performance and achievement. *Education and Urban Society, 43,* 671–695. http://dx.doi.org/10.1177/0013124510380909

Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Mood, A. M., Weinfeld, F. D., & York, R. (1966). *Equality of educational opportunity*. Washington, DC: U. S. Government Printing Office.

Common Core State Standards Initiative. (2010a). *Common Core State Standards for English language arts & literacy in history/social studies, science, and technical subjects*. Washington, DC: Author. Retrieved from http://www.corestandards.org/assets/CCSSI_ELA%20Standards.pdf

Common Core State Standards Initiative. (2010b). *Common Core State Standards for mathematics*. Washington, DC: Author. Retrieved from http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Diaz, V. (2008). Relationships between district size, socioeconomics, expenditures, and student achievement in Washington. *Rural Educator, 29,* 30–39.

Dixon-Román, E. J., Everson, H. T., & McArdle, J. J. (2013). Race, poverty and SAT scores: Modeling the influences of family income on Black and White high school students' SAT performance. *Teachers College Record, 115,* 1–33.

Duncan, G. J., & Magnuson, K. A. (2005). Can family socioeconomic resources account for racial and ethnic test score gaps? *The Future of Children, 15,* 35–54. http://dx.doi.org/10.1353/foc.2005.0004

Duncan, G. J., & Magnuson, K. (2012). Socioeconomic status and cognitive functioning: Moving from correlation to causation. *Wiley Interdisciplinary Reviews: Cognitive Science, 3,* 377–386. http://dx.doi.org/10.1002/wcs.1176

Ehrenberg, R. G., Brewer, D. J., Gamoran, A., & Willms, J. D. (2001). Class size and student achievement. *Psychological Science in the Public Interest, 2,* 1–30. http://dx.doi.org/10.1111/1529-1006.003

Elias, M. J. (2009). Social-emotional and character development and academics as a dual focus of educational policy. *Educational Policy, 23,* 831–846. http://dx.doi.org/10.1177/0895904808330167

Elias, M. J., White, G. W., & Stepney, C. T. (2014). Surmounting the challenges of improving academic performance: Closing the achievement gap through social-emotional and character development. *Journal of Urban Learning, Teaching, and Research, 10,* 14–24.

Evans, G. W. (2004). The environment of childhood poverty. *American Psychologist, 59,* 77–92. http://dx.doi.org/10.1037/0003-066X.59.2.77

Finn, J. D., Gerber, S. B., & Boyd-Zaharias, J. (2005). Small classes in the early grades, academic achievement, and graduating from high school. *Journal of Educational Psychology, 97,* 214–223.

Fletcher, J. (2009). Is identification with school the key component in the 'Black Box' of education outcomes? Evidence from a randomised experiment. *Economics of Education Review, 28,* 662–671. http://dx.doi.org/10.1016/j.econedurev.2009.01.007

Food and Nutrition Service USDA. (2009). Child nutrition programs—Income eligibility guidelines. *Federal Register, 74*(58), 13410–13412. Retrieved from http://www.fns.usda.gov/cnd/Governance/notices/iegs/IEGs09-10.pdf

Gaddis, S. M., & Lauen, D. L. (2014). School accountability and the black-white test score gap. *Social Science Research, 44,* 15–31. http://dx.doi.org/10.1016/j.ssresearch.2013.10.008

Galton, M., & Pell, T. (2012). Longitudinal effects of class size reductions on attainment: Results from Hong Kong primary classrooms. *International Journal of Educational Research, 53,* 360–369. http://dx.doi.org/10.1016/j.ijer.2012.05.001

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (2004). Why public schools lose teachers. *The Journal of Human Resources, 39,* 326–354. http://dx.doi.org/10.2307/3559017

Hattie, J. (2005). The paradox of reducing class size and improving learning outcomes. *International Journal of Educational Research, 43,* 387–425. http://dx.doi.org/10.1016/j.ijer.2006.07.002

Herbers, J. E., Cutuli, J. J., Supkoff, L. M., Heistad, D., Chan, C. K., Hinz, E., & Masten, A. S. (2012). Early reading skills and academic achievement trajectories of students facing poverty, homelessness, and high residential mobility. *Educational Researcher, 41,* 366–374. http://dx.doi.org/10.3102/0013189X12445320

Jackson, C. K. (2009). Student demographics, teacher sorting, and teacher quality: Evidence from the end of school desegregation. *Journal of Labor Economics, 27,* 213–256. http://dx.doi.org/10.1086/599334

Jennings, J. L., & Bearak, J. M. (2014). "Teaching to the test" in the NCLB era: How test predictability affects our understanding of student performance. *Educational Researcher, 43,* 381–389. http://dx.doi.org/10.3102/0013189X14554449

Jones, L. V., Olkin, I., & American Educational Research Association. (2004). *The nation's report card: Evolution and perspectives*. Bloomington, IN: Phi Delta Kappa Educational Foundation in cooperation with the American Educational Research Association.

Kainz, K., & Pan, Y. (2014). Segregated school effects on first grade reading gains: Using propensity score matching to disentangle effects for African-American, Latino, and European-American students. *Early Childhood Research Quarterly, 29,* 531–537. http://dx.doi.org/10.1016/j.ecresq.2014.06.005

Kainz, K., & Vernon-Feagans, L. (2007). The ecology of early reading development for children in poverty. *The Elementary School Journal, 107,* 407–427. http://dx.doi.org/10.1086/518621

Kardos, S. M., Johnson, S. M., Peske, H. G., Kauffman, D., & Liu, E. (2001). Counting on colleagues: New teachers encounter the professional cultures of their schools. *Educational Administration Quarterly, 37,* 250–290. http://dx.doi.org/10.1177/00131610121969316

Keigher, A. (2010). *Teacher attrition and mobility: Results from the 2008–09 Teacher Follow-Up Survey*. First Look. NCES 2010–353. Jessup, MD: National Center for Education Statistics.

Kloos, B., Hill, J., Thomas, E., Wandersman, A., Elias, M. J., & Dalton, J. H. (2012). *Community psychology: Linking individuals and communities* (3rd ed.). Belmont, CA: Wadsworth Publishing.

Krueger, A. B. (2003). Economic considerations and class size. *The Economic Journal, 113,* F34–F63. http://dx.doi.org/10.1111/1468-0297.00098

Lee, V., & Loeb, S. (2000). School size in Chicago elementary schools: Effects on teachers' attitudes and students' achievement. *American Educational Research Journal, 37,* 3–31. http://dx.doi.org/10.3102/00028312037001003

Leithwood, K., & Jantzi, D. (2009). A review of empirical evidence about school size effects: A policy perspective. *Review of Educational Research, 79,* 464–490. http://dx.doi.org/10.3102/0034654308326158

Lindo, E. (2014). Family background as a predictor of reading comprehension performance: An examination of the contributions of human, financial, and social capital. *Learning and Individual Differences, 32,* 287–293. http://dx.doi.org/10.1016/j.lindif.2014.03.021

Mickelson, R. A., Bottia, M. C., & Lambert, R. (2013). Effects of school racial composition on K–12 mathematics outcomes: A metaregression analysis. *Review of Educational Research, 83,* 121–158. http://dx.doi.org/10.3102/0034654312475322

Molnar, A., Smith, P., Zahorik, J., Palmer, A., Halbach, A., & Ehrle, K. (1999). Evaluating the SAGE programme: A pilot programme in targeted pupil-teacher reductions in Wisconsin. *Educational Evaluation and Policy Analysis, 21,* 165–177. http://dx.doi.org/10.3102/01623737021002165

Myers, S. L., Jr., Kim, H., & Mandala, C. (2004). The effect of school poverty on racial gaps in test scores: The case of the Minnesota Basic Standards Tests. *Journal of Negro Education, 73,* 81–98. http://dx.doi.org/10.2307/3211261

National Center for Education Statistics. (2010). Common core of data. Retrieved from http://nces.ed.gov/ccd/

Noble, K. G., Houston, S. M., Brito, N. H., Bartsch, H., Kan, E., Kuperman, J. M., . . . Sowell, E. R. (2015). Family income, parental education and brain structure in children and adolescents. *Nature Neuroscience, 18,* 773–778. http://dx.doi.org/10.1038/nn.3983

No Child Left Behind (NCLB). (2002). *No Child Left Behind (NCLB) Act of 2001, Pub. L. No. 107–110, § 115 Stat. 1425*.

Orfield, G. (2014). Tenth annual Brown lecture in education research: A new civil rights agenda for American education. *Educational Researcher, 43,* 273–292. http://dx.doi.org/10.3102/0013189X14547874

Orfield, G., & Frankenberg, E. (2014). Increasingly segregated and unequal schools as courts reverse policy. *Educational Administration Quarterly, 50,* 718–734. http://dx.doi.org/10.1177/0013161X14548942

Ou, S. R., & Reynolds, A. J. (2008). Predictors of educational attainment in the Chicago Longitudinal Study. *School Psychology Quarterly, 23,* 199–229. http://dx.doi.org/10.1037/1045-3830.23.2.199

Palardy, G. J. (2013). High school socioeconomic segregation and student attainment. *American Educational Research Journal, 50,* 714–754. http://dx.doi.org/10.3102/0002831213481240

Perie, M., Moran, R., & Lutkus, A. D. (2005). *NAEP 2004 trends in academic progress: Three decades of student performance in reading and mathematics*. Washington, DC: U. S. Government Printing Office.

Phillips, M., Crouse, J., & Ralph, J. (1998). Does the Black-White test score gap widen after children enter school? In C. Jencks & M. Phillips (Eds.), *The Black-White test score gap* (pp. 229–272). Washington, DC: Brookings Institute.

Prier, D. D. (2014). Where do biases start? A challenge to educators. *Education Week, 34,* 25–28.

Reardon, S. F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. In G. J. Duncan & R. J. Murnane (Eds.), *Whither opportunity?: Rising inequality, schools, and children's life chances* (pp. 91–116). New York, NY: Russell Sage Foundation.

Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica, 73,* 417–458. http://dx.doi.org/10.1111/j.1468-0262.2005.00584.x

Ronfeldt, M., Hamilton, R., Loeb, M., & Wycoff, J. (2013). How teacher turnover harms student achievement. *American Educational Research Journal, 50,* 4–36. http://dx.doi.org/10.3102/0002831212463813

Rothstein, R. (2004). *Class and schools: Using social, economic, and educational reform to close the black-white achievement gap*. Washington, DC: Economic Policy Institute.

Rothstein, R. (2015). The racial achievement gap, segregated schools, and segregated neighborhoods: A constitutional insult. *Race and Social Problems, 7,* 21–30. http://dx.doi.org/10.1007/s12552-014-9134-1

Rumberger, R., & Palardy, G. (2005). Does segregation still matter? The impact of student composition on academic achievement in high school. *Teachers College Record, 107,* 1999–2045.

Sanbonmatsu, L., Kling, J. R., Duncan, G. J., & Brooks-Gunn, J. (2006). Neighborhoods and academic achievement results from the Moving to Opportunity experiment. *The Journal of Human Resources, XLI,* 649–691. http://dx.doi.org/10.3368/jhr.XLI.4.649

Scafidi, B., Sjoquist, D. L., & Stinebrickner, T. R. (2007). Race, poverty, and teacher mobility. *Economics of Education Review, 26,* 145–159. http://dx.doi.org/10.1016/j.econedurev.2005.08.006

Sharkey, P. (2012). Temporary integration, resilient inequality: Race and neighborhood change in the transition to adulthood. *Demography, 49,* 889–912. http://dx.doi.org/10.1007/s13524-012-0105-0

Sharkey, P. (2014). Spatial segmentation and the black middle class. *American Journal of Sociology, 119,* 903–954. http://dx.doi.org/10.1086/674561

Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *American Journal of Sociology, 116,* 1934–1981. http://dx.doi.org/10.1086/660009

Shernoff, E. S., Mehta, T. G., Atkins, M. S., Torf, R., & Spencer, J. (2011). A qualitative study of the sources and impact of stress among urban teachers. *School Mental Health,* 1–11.

Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research, 75,* 417–453. http://dx.doi.org/10.3102/00346543075003417

Southworth, S. (2010). Examining the effects of school composition on North Carolina student achievement over time. *Education Policy Analysis Archives, 18,* 1–45.

State of New Jersey Department of Education. (2010). *School report cards for 2010–11 school year*. Retrieved from http://education.state.nj.us/rc/rc11/

Stepney, C. T., White, G. W., Far, K., & Elias, M. J. (2014). Girls Leading outward (GLO): A school-based leadership intervention to promote resilience for at-risk middle school girls. In S. Prince-Embury & D. H. Saklofske (Eds.), *Resilience interventions for youth in diverse populations* (Vol. II, pp. 109–132). New York, NY: Springer. http://dx.doi.org/10.1007/978-1-4939-0542-3_6

U.S. Census Bureau. (2011). *Child poverty in the United States 2009 and 2010: Selected race groups and Hispanic origin*. Washington, DC: U. S. Government Printing Office.

U.S. Census Bureau. (2012). *Income, poverty and health insurance coverage in the United States: 2011*. Washington, DC: U. S. Government Printing Office.

U.S. Department of Education, Institute of Education Sciences, & National Center for Education Statistics. (2010). *National Assessment of Educational Progress (NAEP) 2005, 2007, and 2009: Mathematics assessments*. Washington, DC: Author.

Vanfossen, B., Brown, C. H., Kellam, S., Sokoloff, N., & Doering, S. (2010). Neighborhood context and the development of aggression in boys and girls. *Journal of Community Psychology, 38,* 329–349. http://dx.doi.org/10.1002/jcop.20367

White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin, 91,* 461–481. http://dx.doi.org/10.1037/0033-2909.91.3.461