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Socioeconomic Status, Race, Gender, & Retention: Impact on Student Achievement

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Abstract

The purpose of this article is to discuss the impact of socioeconomic status, race, gender, and retention on student achievement. Increasing attention has been paid to the quality of education in the United States as international reports compare the academic achievement of students in this country with others in the world. Many states are basing promotion of students on state assessments. High stakes testing has led to higher retention rates in several states. It is everyone's responsibility to ensure that students who are retained do not drop out of school and therefore get left behind.

Introduction

Increasing attention has been paid to the quality of public education in the United States as international reports compare the academic achievement of our students with others in the world. This article will focus on the impact of socioeconomic status, race, gender and retention on student achievement.

Socioeconomic Status

Since Coleman's (1966) landmark study on *Equality of Educational Opportunity*, socioeconomic status has been seen as a strong predictor of student achievement. Coleman asserted that the influence of student background was greater than anything that goes on within schools. Poverty is indeed a factor among children in the United States. Rainwater and Smeeding (1995), in their 18 nation *Luxembourg Income Study*, found that during the 1990s families of children in the United States had lower real income than families of children in almost every other nation. Although the poverty rate for people under 18 years old dropped from 16.9% in 1999 to 16.2% in 2000 (U.S. Census Bureau, 2001), American children remained the poorest population by age group. Of these approximately 12 million children, one third live in extreme poverty in families with incomes below 50% of the poverty line. The child poverty rate in Louisiana is the second highest in the United States (Hoff, 2002) and the highest in the South at 29% (Bennett & Lu, 2000). The per capita personal income in Louisiana in 1998 was only 82% of the U.S.

average, and that of the school district in this study was only 69% of the United States' average (Center for Business & Economic Research, n.d.). This means that another large portion of children was very near the poverty level, adding to the total number of children in economic constraints at the time this study was conducted.

The issue of socioeconomic status and its relationship to student achievement is more complex than Coleman's (1966) report first intimated. First of all, the relationship can be explored on various unit levels, from that of nations and states, districts, and schools, and on to classes and individual students. Payne and Biddle (1999) commented in their study of data obtained from the Second International Mathematics Study (SIMS) that if the United States had been represented only by its school districts with low-level poverty, the United States would have ranked second out of the 23 nations involved. If the high-poverty district scores were used, the United States would have ranked only above Nigeria and Swaziland. Findings from Binkley and Williams' (1996) study of the International Association for the Evaluation of Educational Achievement (IEA) Reading Literacy Study supported a somewhat similar comparison between poverty and reading literacy. The low-poverty fourth-grade group in the United States fared better than any group in the 32 other countries. The high-poverty group scored much lower than the low-poverty group, but never fell below the international average. Since the IEA assessment measured only a basic comprehension level, low socioeconomic status was not as strong a detriment to U.S. students in an international reading comparison as that shown by the study of the SIMS higher level mathematics assessment.

At the national level, Chall (1996) analyzed a combination of National Assessment of Educational Progress (NAEP) reading results, Scholastic Aptitude Test scores over time, and a synthesis of research on beginning reading from 1910 to 1996. She also concluded that there are large differences between higher- and lower-socioeconomic status children. The differences were smaller among younger children and increased in the higher grades.

Using the 1996 NAEP data for state-level mathematics achievement and for state-level poverty and *Education Week's* 1997 edition of *Quality Counts* for state-level funding of education, Biddle (1997) concluded that the child poverty/achievement correlation was $r = .700$ ($p < .001$) and that, together, school funding and child poverty predict 55% of the variance of state differences in mathematics achievement. The impact of child poverty was stronger at the state than the district level. Darling-Hammond (1999) also used NAEP data at the state level, this time from two years of fourth-grade mathematics results, two years of eighth-grade mathematics results, and two years of fourth-grade reading results. She also concluded that poverty was significantly and negatively correlated with student outcomes at the state level.

In a district level study of urban schools belonging to the Council of Great City Schools (2001), the results of the Stanford Achievement Test indicated that the greater the concentration of poverty in the school districts, the lower the student achievement. Of the three grades—4th, 8th, and 10th—selected to report poverty data, achievement gaps between districts of high and moderate concentrations of poverty were generally greatest

in fourth grade in both reading and mathematics. Caldas (1999) compiled the results of all Louisiana 10th graders in 1990 who took the Louisiana Graduation Exit Examination to correlate both district- and school-level effects of poverty on achievement. SES accounted for 45.5% of the variation between districts and 41% of the variation among schools within districts. However, Caldas discovered that the percentage of one-parent families accounted for 96% of the variation in average school test scores among districts and for 59% of the variation among schools within districts. He further found that even if a student came from a two-parent family, the domination of a school or district by one-parent families could have an overriding negative influence stronger than that of poverty or race.

In a study of West Virginia districts and schools in grades 3, 6, 9, and 11, Howley (1995) found a weaker level of correlation between SES and achievement at these levels. Additional analysis revealed that the smaller class sizes in most West Virginia schools tended to ameliorate the negative effects of poverty. The Matthew Project (Howley & Bickel, 1999) extended this study to four additional states: Ohio, Georgia, Texas, and Montana. The additional findings further supported the benefits of smaller class sizes for impoverished communities and the benefits of larger classes for more affluent communities. This was most evident at the school level.

The U.S. Department of Education conducted *The Longitudinal Evaluation of School Change and Performance (LESCP) in Title I Schools* (2001a) to determine the effectiveness of Title I schools. Key findings were that individual and school poverty had a clear, negative effect on student achievement and that students who attended schools with the highest percentages of poor students performed worse initially on both reading and mathematics tests. Gaps in reading remained the same from third to fifth grades, but gaps in mathematics partially closed. Teacher effects made the difference in this study and in another one by Fetler (1999) of California state high schools. Again, however, poverty had a strong relationship to achievement at the school level. Analysis of Stanford 9 scores in reading and mathematics from 2,000 fifth graders in Texas (Klein, Hamilton, McCaffrey, & Stecher, 2000) also showed a strong negative correlation at the school level. The percentage of students at a school who were in the federal free- and reduced-lunch program predicted that school's mean on the test regardless of test type, multiple choice or open-ended. Sander (2001) compared Chicago schools with those in the rest of Illinois. Again, the low-income students had lower achievement, but Chicago grade schools were just as efficient as the others in teaching reading and mathematics after factoring out family background. Reading scores became significantly lower for impoverished students at the high school level, consistent with Chall's (1996) findings.

The strength of the district and school level influences of socioeconomic status on academic achievement is evident in a growing movement to integrate school districts on the basis of equitable economic status rather than on racial equity. LaCrosse, Wisconsin, was the first (Kahlenberg, 1999), followed by others including San Francisco, California, and most recently, Cambridge, North Carolina (Richard, 2002).

A study of more than 6,000 fourth-grade classrooms in Texas (Lopez, 1995) revealed that low SES classrooms had significantly lower gains on the Norm-referenced Assessment Program of Texas than non-low SES classrooms. At the classroom level, however, teacher factors influenced student achievement causing greater variance. Poverty played a significant role in the print environment and experience of students in first-grade classrooms in the greater Boston area (Duke, 2000). Poor classes had books and magazines, less print on the walls and other surfaces, less exposure to and experience with extended text, and less time engaged in activities in which students had a high degree of authorship. The reverse was true of classes with more financial support.

To further illustrate the degree to which individual schools and classes can reduce the effects of poverty on student achievement, The Education Trust (Jerald, 2001) identified 4,577 schools nationwide that were in the top third of their state in reading or mathematics performance and that had at least 50% low-income or at least 50% minority students compared with other schools at their grade level. Louisiana had 96 of those schools, but none of them were in the school district in this study.

The influence of socioeconomic status at the individual level is still prevalent (Capraro, 2000) but less strong in much of the literature. Entwisle and Alexander (1996), in a study of mother-only, mother-extended family, and two-parent families with children in first through third grades, concluded that two measures of parent expectations had a somewhat stronger influence than did the economic variables. The effects of prior achievement were stronger than poverty on junior high and high school students in a study of data obtained from the Longitudinal Study of American Youth (Brookhart, 1997). Cultural effects of a race and gender interaction for African American males among elementary school-aged children (Diamond & Onwuegbuzie, 2001) were stronger than socioeconomic status in predicting reading achievement. SES became stronger for individuals at the postsecondary level (Trusty, 2000) because more family and individual resources are necessary to attain this level. However, low prior mathematics achievement can have a strong barrier effect as well, regardless of family or individual SES.

In a meta-analysis of socioeconomic status, White (1982) concluded that the utility and wisdom of using SES in conjunction with academic achievement depended largely on the unit of analysis and the validity of the way in which it was defined. This study used operational definitions of SES. First, individual SES was defined by participation in the federal free- and reduced-lunch program to show only a weak correlation with academic achievement at this level. Secondly, enrollment in a Title I school designated school-level SES because these schools, by qualification, must have 70% or more of their student populations participating in the free- and reduced-lunch program.

Race

The factor of race or ethnicity is closely associated with that of poverty as a predictor of achievement. Harkreader and Weathersby (1998) found its influence much

less than economic factors, whereas Bankston and Caldas (1998) concluded that minority status was more highly related to achievement than was socioeconomic status.

Coleman's report (1966) was the basis for the desegregation required in the civil rights acts of the 1960s. As a result, the South became the most highly integrated part of the nation with the most substantial contact between African American and White students (Orfield, 2001). During the 1990s, there were three major Supreme Court decisions authorizing a return to segregated neighborhood schools and limiting the reach and duration of desegregation orders. These decisions took the stance that positive policies taking race into account for the purpose of creating integration were suspect and had to demonstrate both a compelling reason and prove that the goal could not be realized without considering race. The 2000 Census showed a continuing return of African Americans to the South into more racially segregated situations. However, it is still more common for African Americans to attend school with Whites in the South than in any other part of the country (Orfield, 2001).

African American children (33.1%) are more likely to live in poverty than White children (13.5%). They are also more likely to have single parents, and more likely to be welfare dependent (Rector, Johnson, & Fagan, 2001). African American children are also disproportionately represented in Title I schools (Puma, 2000). Racial minority status is more likely to be correlated with lower teacher qualifications such as certification and years of experience (Darling-Hammond, 1999).

Data collected at a national level have been analyzed in a variety of ways to determine if the achievement gap between White students and racial minority students has narrowed. The National Center for Education Statistics (Jacobson, Olsen, Rice, & Sweetland, 2001) used data from several cohorts of the Chapter I Prospects Study, a study commissioned by congress to evaluate the Title I program, to determine that mathematics and reading scores of African Americans were generally lower than corresponding scores of Whites even with similar levels of prior achievement one or two grades earlier. The gap narrowed during elementary school but widened during junior high school with little change in high school. Phillips, Crouse, and Ralph (1998) used these data plus the National Education Longitudinal Survey (NELS) data and came to the same conclusion about mathematics achievement. However, they determined that race had a stronger effect on reading growth than on mathematics growth, with the biggest gap generated in elementary school.

Grissmer, Kirby, Berends, and Williamson (1994) used data from NELS together with data from the National Longitudinal Survey of Youth and the National Assessment of Educational Progress (NAEP) test to determine that the rising test scores of minorities have resulted in a significant closing of the achievement gap between minority and non-minority youth. However, the gap that remained was still significant. Barron and Koretz (1994) maintained that the small sampling sizes for minorities used in the trend NAEP, one part of the NAEP test specifically designed to track national longitudinal achievement data, cause unreliable conclusions to be reached in racial comparisons. Standard errors for minorities were twice that of Whites. The study determined that

minorities would have to have much larger gains than Whites to achieve significance. The source for recording racial data also has a strong impact on the results. Young elementary students who self-reported race were more likely to respond inconsistently with adults who reported observed racial options. Since NAEP racial data are self-reported, the smaller sampling of minority students might indeed be affected by this inconsistency, particularly at the fourth grade, the lowest grade tested.

The particular achievement test used was also an influencing factor in determining racial gap scores. Klein et al. (2000) reported that the NAEP test showed a gap that was wide to begin with and got wider with time for Texas students. During the same time period, Texas Assessment of Academic Skills showed that the gap started off somewhat smaller and then became substantially smaller over a four-year period. In a study of the Ohio state proficiency test, Dimitrov (1999) determined that the response format, open-ended versus multiple-choice, did not make much difference by ethnicity. Only the low and high ability Hispanics had negative academic relationships to their response strategies for multiple-choice items, not the extended response items one might expect with limited English proficiency. The end-of-grade tests in North Carolina (North Carolina State Department of Public Instruction, 2000) reflected a racial disparity with African Americans, Hispanics, and Native Americans performing well below Multi-Racial, Asian and White groups. However, all groups continued to improve.

The Education Trust (2001) reported a closing of the gap in basic skills in mathematics by race during the 1970s and the 1980s, but the gap remained the same or widened at higher levels of cognition. In Louisiana, in particular, African American fourth graders made more progress in mathematics from 1992 to 1996 than they did in most other states (Education Trust, 2001). However, achievement gaps remained constant between eighth grade White and African American students from 1992 to 2000 (National Education Goals Panel, 2001).

In reading, the National Center for Education Statistics (Donahue, Voelkl, Campbell, & Mazzeo, 1999) concluded that in 1998 eighth grade African American students achieved a significant gain over their NAEP scores in both 1992 and 1994, while fourth grade African American students achieved a significant gain over their 1994 results. Louisiana African American fourth graders, however, made reading gains five points less than the national average (Education Trust, 2001). At the eighth grade, the gap between Louisiana African American and White students' reading achievement was 27 points. Besides being influential in their own right, racial and ethnic cultural influences may also combine with smaller gender effects to predict achievement.

Gender

Some correlation appears to exist between gender and reading achievement. Disaggregation of the 1998 NAEP reading results by gender rather than race (Donahue et al., 1999) revealed that females outperformed males in 4th, 8th, and 12th grades, as they also did in 1992 and 1994. At the 4th-grade level, however, the males made a significant gain over their 1994 score while the females remained the same. A similar trend was

noted in the North Carolina end-of-grade tests administered in grades three through eight (North Carolina State Department of Public Instruction, 2000). A similar phenomenon appears to be occurring in Great Britain as well (Salisbury & Rees, 1999).

Perhaps some of this gender difference can be explained by a national survey of reading attitudes conducted with 18,185 children across the United States in first through third grade (McKenna, Kear, & Ellsworth, 1995). Girls as a group possessed more positive attitudes than boys at all grade levels, both toward recreational and academic reading. These attitudes appeared unrelated to ability. A four-year longitudinal study of elementary school age children in Michigan (Eccles, Wigfield, Harold, & Blumenfeld, 1993) revealed that girls valued reading significantly more than boys and also saw themselves as being more competent readers than boys. Using data from the National Longitudinal Survey of Youth, Baharudin and Luster (1998) found that female children in the overall sample and in the Caucasian subsample appeared to receive more supportive care than male children. These same two groups scored significantly higher than males on reading achievement as well. Effects for gender in reading were seen as early as second grade (Entwisle & Alexander, 1996) and continued through high school (Binkley & Williams, 1996).

Gender as a predictor of mathematics achievement in Baharudin and Luster's study (1998) of six- to eight-year olds emerged again as significant for females in general and for the African American female subgroup. On the NAEP 2000 Mathematics Assessment (U.S. Department of Education, 2001b), however, a higher percentage of boys performed at or above *Proficient* than girls at 4th, 8th, and 12th grades, with the older two grades being significantly higher. The gap between the average scale scores of males and females was quite small at all three grades and has fluctuated only slightly over the past 10 years. There was no significant difference by gender at the fourth-grade level. In Louisiana, neither the scale scores nor the percentage of students scoring at or above the *Proficient* level was significant for gender at fourth grade. At eighth grade, the difference in scale scores was not significant, but the difference in percentages scoring above the *Proficient* level was positively significant for males.

In an international comparison of Third International Mathematics and Science Study data in English-speaking countries, Webster, Young, and Fisher (1999) determined that in Australia and the United States very little of the student level variance was explained by gender and SES, although most of the variance was at the student level and not at the class level. The U.S. Department of Education's (2000) analysis of that same data revealed that males outperformed females in 3 of the 25 countries at the fourth-grade level, in 8 of the 39 countries at the eighth-grade level, and in 18 of the 21 countries participating in their final year of secondary school. However, in the United States, males and females scored similarly at all three levels.

Results from an analysis of the National Educational Longitudinal Study of 1988 data (Catsambis, 1994) showed that male and female eighth graders attained similar achievement, but a larger portion of girls were placed in high-ability classes and a larger portion of boys were placed in low-ability classes. Racial/ethnic influences may have

played a role in secondary mathematics course selections and judgment of academic performance. The chances of young African American women enrolling in high-ability mathematics classes were 48% greater than those of African American male students. Hispanic females reported lower participation in these classes and higher performance anxiety, while White females had the highest enrollment in high-ability classes. Females in general in this study, and also in Campbell and Beaudry's study (1998) of the Longitudinal Study of American Youth data, revealed less confidence in their mathematical ability and greater exertion of effort in mathematics classes than males.

Mathematical ways of thinking may differ by gender according to Fennema, Carpenter, Jacobs, Franke, and Levi (1998). These researchers studied 82 children as they progressed from first through third grades. They identified gender differences in strategy use that was evident from the beginning of the study and persisted through the end. Girls tended to use more modeling or counting strategies, while boys tended to use more abstract strategies such as derived facts or invented algorithms. By the third grade, girls used significantly more standard algorithms than did the boys.

In an analysis of the Delaware Student Testing Program and the Stanford Achievement Test Series 9th Edition for students in 3rd, 5th, 8th, and 10th grades, Zhang and Manon (2000) found that males had a larger variance in mathematics scores than females. In this study, females tended to outperform males among the low-achieving students and males tended to outperform females among the high-achieving students. This higher variance for males makes them more susceptible to rewards and sanctions in many state accountability systems.

Retention

Gender, race, and socioeconomic status also have a role to play in the issue of retention. McCoy and Reynolds (1998) used data from the Chicago Longitudinal Study of 1,164 low-income, mostly African American 14-year-old students who had all attended a federally funded kindergarten program. Retained children were most likely to be boys and most likely to have lower scores in reading and mathematics achievement. No national or regional agencies monitor grade retention. However, a report for the National Research Council (1999b) used information from the U.S. Census Bureau to determine that, nationally, sex differential in retention gradually increases with age from five percentage points at ages 6 to 9 to ten percentage points at ages 15 to 17. Rates of retention are racially similar at the younger ages, but by ages 15 to 17 the rate is between 40% to 50% among African Americans and Hispanics, but only 25% to 35% among Whites. Hauser (1999) estimated that at least 15%, and probably 20%, of children have been held back at some time in their lives. In 1998, 41% of teachers reported that their schools promoted students based on age, but in 2001, only 31% did so (Johnson, Duffett, Foleno, Foley & Farkas, 2001). The Louisiana Department of Education (2001) analyzed its Student Information System (SIS) data from 1997-2001 in grades K-12 and found that male students were more likely to be retained than female students, and students on free lunch were twice as likely to be retained as students not receiving any food services. However, African American students receiving reduced lunch had significantly lower

retention rates than those on free lunch or those not receiving any food services in 2000-2001.

This same study (Louisiana Department of Education, 2001) revealed that the number of students retained more than tripled in fourth and eighth grades, reflecting the impact of high stakes testing on retention in the state of Louisiana. With eight states planning to base promotion in some grades on statewide assessment results by 2004 (Edwards, Chronister, & Olson, 2002), this impact is likely to increase. Cizek, Trent, Crandell, Hirsch, and Keene (2000) surveyed teachers and principals of a random stratified sample of fourth-grade students across the state of Ohio to determine if their assessment of students' readiness for fifth grade corresponded with the results of the Ohio Proficiency Test administered at the end of fourth grade. Educator agreement was high, but varied by district in relation to the standards of the proficiency test. Since the number of students actually retained was considerably less than the number of students deemed unprepared, suggested further research includes discovering additional criteria on which to base decisions related to retention.

The results of retention were decreased academic progress and higher dropout rates. Roderick, Bryk, Jacob, Easton, and Allensworth (1999) conducted an analysis of the implementation of the first two years of the Chicago Public Schools' intensive effort to end social promotion and raise achievement, which began in 1996. Their analysis revealed that only one fourth of retained eighth graders and one third of retained third and sixth graders in 1997 made "normal" progress to pass the test cutoff the next May. Retention was therefore better for some students in the short term. However, the average Iowa Test of Basic Skills (ITBS) score increase in the two years required to repeat a grade was 1.2 grade equivalents compared to 1.5 grade equivalents for students who had similar scores and were promoted prior to policy implementation. The performance of third graders was significantly poorer than that of sixth and eighth graders, indicating that remediation strategies may need to be different for younger children than for older children.

A later follow-up of the Chicago study (Roderick, Nagaoka, Bacon, & Easton, 2000) disclosed some additional negative results of retention. First, despite higher passing rates, retention rates have not fallen. This is due to the fact that, over the three year study, fewer students are being socially promoted as a result of the stricter guidelines for promotion. Secondly, retained students are struggling in their second time to face the promotion policy because they still do not do well in the next tested grade. Finally, nearly a third of retained eighth graders in 1997 had dropped out by the fall of 1999. However, overall dropout rates were stable. Several positive results were also discovered. Passing rates improved in all three grades, more at-risk sixth and eighth graders are raising their test scores during the school year, and more students maintained positive test trajectories two years after promotion.

Students in the state of Texas were analyzed by Haney (2000), who found that a comparison of the cumulative total of 2.2 million students enrolled in sixth grade between the fall of 1984 and the spring of 1993 and of the cumulative total of 1.5 million

graduates in the classes of 1992 and 1999 meant that during that nine year period around 700,000 children were lost or left behind before graduation. Haney attributed this to an increase in retention rates, particularly among African Americans and Hispanics, and an increase in the dropout rate. Only 50% of minority students have been progressing from ninth grade to graduation since the initiation of the Texas Assessment of Academic Skills (TAAS), again reflecting the impact of high stakes testing and accountability. With increased pressure on students to achieve comes increased pressure on teachers' ability to teach them what they need to know and to be able to do.

Summary

If highly qualified educators are charged with ensuring that no child is left behind regardless of socioeconomic status, race, or gender then they must be given the training and tools to assist them in this task. High stakes testing has led to higher retention rates in several states. It is everyone's responsibility to ensure that students who are retained do not drop out of school and therefore get left behind.

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