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An Examination of Mathematics Achievement and Growth in a Midwestern Urban School District: Implications for Teachers and Administrators

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In this article, the authors investigate the achievement gap in the context of a particular region and the factors associated with student learning in that region. Data were collected over several years from recent administrations of the mathematics section of the Measurement of Academic Progress in Colorado. Black and Hispanic mathematics achievement and growth were compared to White student achievement and growth. The results indicate that gaps exist not only in mathematics achievement but also in mathematics growth. A statistically significant difference in mathematics growth rates between Black and Hispanic students from different economic backgrounds were found; however, a statistically significant difference in mathematics growth rates by gender was only found in Black and Hispanic third grade students. The authors provide explanations as well as implications of the factors associated with the results with the hope of influencing research and practice.

KEYWORDS: achievement gap, gender differences, high-stakes testing, mathematics, reform curriculum, urban education

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The No Child Left behind Act of 2001 (NCLB)[1] placed particular attention on the disaggregated results of student performance on state developed assessments. Under NCLB, the results of state assessments are analyzed along with er academic indicators, such as student attendance rates, student enrollment in Advanced Placement courses, and graduation rates to create an adequate yearly progress (AYP) profile that serves as a school "report card" each academic year. The AYP academic indicators are designed to allow parents, community leaders, and school-district personnel to more objectively identify academic areas of strength, as well as academic content areas needing improvement (Simpson, LaCava, & Graner, 2004).

One of the primary components of AYP is the percentage of students being evaluated academically that meet the academic benchmark of proficient in each tested content area. Data from the AYP profile are used to evaluate each local school site and the school districts' ability to meet the academic needs of all subpopulations of students. Each subpopulation of students is expected to improve by a certain percentage each year. Based on the data provided from the various reports, this percentage of improvement is used to determine whether or not a school is consistently improving. Typically, schools are measured on their ability to increase the percentages of particular subpopulations that perform at the proficient level (McCall, Kingsbury, & Olson, 2004). A ranking system, usually regulated by state education officials, is then used to determine whether a school's accreditation should come into question by district and state education officials. A significant portion of school's accountability structure is generated by this ranking system. This accountability structure requires that all educators and administrators critically evaluate the performance of all students; however, it is not uncommon that many of the school districts identified for improvement based on AYP are large urban districts that serve Black and Hispanic students (Tracey, Sunderman, & Orfield, 2005). Owens and Sunderman (2006) found that the schools most likely to be identified as "needing improvement" are highly segregated and enroll a disproportionate share of the state's minority and low-income students.

Data from the National Assessment of Educational Progress (NAEP) suggested that despite the efforts of NCLB, the Black–White and Hispanic–White achievement gap in mathematics remains unchanged (Lee, 2006). The NAEP was administered in grades 4 and 8 with slight fluctuations in student subgroup performance. For example, results of the NAEP indicated that White–Black and White–Hispanic gaps among 4th and 8th graders did not narrow meaningfully between 2003 and 2005 in mathematics (Lee). The results of the NAEP also indicated that the racial gap change in mathematics between 2003 and 2005 was not statistically significant. However, a two-point reduction was found in the differ-

[1] No Child Left Behind Act of 2001, Public Law 107-110, 20 U.S.C., §390 et seq.

ence between average mathematics achievement scores between White and Hispanic students in grade 8 (Lee). A feasible explanation for the current trends in mathematics achievement may be found in a thorough investigation of early mathematics achievement and mathematics growth.

Unfortunately, many Black and Hispanic students may enter school with several academic "risk" factors that can inhibit their initial academic achievement and may translate to slower mathematics growth rates (Rathbun, West, & Walston, 2005). Other factors such as previous exposure to mathematics and lack of adequate resources are usually outside the control of the student; however, these factors may influence the growth at which these students master mathematic skills and concepts. Despite the differences in mathematics achievement and growth, NCLB requires that students reach high academic standards and that all students progress at an acceptable rate. Furthermore, the NCLB Act states that parents have the right to receive educational vouchers to transfer students to different schools at the expense of the current school district if the school district fails to improve the performance of all subpopulations to the degree specified. Students should have an opportunity to be adequately educated by neighborhood schools.

Increasing the achievement of all students in mathematics begins with early recognition of mathematics deficiencies and evaluation of not only mathematics achievement but also mathematics growth. Furthermore, educators, administrators, and researchers may learn valuable information about the achievement of Black and Hispanic students by investigating early trends in mathematics growth. As a result, the purpose of this study is to compare the mathematics achievement and mathematics growth of minority students and their White peers in an urban school district in Colorado. The skills that students possess when they enter elementary school and their academic progress while in elementary school have a great impact on subsequent academic outcomes and experiences (National Association for the Education of Young Children [NAEYC]; National Council of Teachers of Mathematics [NCTM], 2002). Thus, this study seeks to explain student achievement across grade levels in regards to closing the achievement gap among constituents in a large urban school district, particularly Black and Hispanic students, who are usually impacted the most by standardized testing under NCLB.

Factors Impacting Mathematics Achievement and Growth

Initial Achievement and Mathematics Growth

Kindergarten students enter schools from various backgrounds and academic skills. Initial academic differences may equate to differences in achievement and mathematics growth. Some suggest that achievement trajectories may vary between different subgroups (Jordan, Kaplan, Olah, & Locuniak, 2006). Initial academic achievement differences in primary school are most pronounced between poor students and their more affluent counterparts and between minority and White students (Benson, Borman, & Wisconsin Center for Education Research, 2007). Students who enter school with varying degrees of mathematical knowledge may gain mathematics skills differentially than their peers. For example, if one student enters kindergarten with a firm understanding of the concept of quantity, then he or she is at an advantage because any further enrichment adds to the student's foundational understanding.

Several empirical studies indicate that initial performance predicts positive subsequent academic growth (Aunola, Leskinen, Lerkkanen, & Nurmi, 2004; Bodovski & Farkas, 2007; Rescorla & Rosenthal, 2004). The opposite was found for some students that entered school with lower initial mathematics achievement. Fan (2001) suggested that some students are faced with "double barreled" barriers of low initial performance and lower growth rates than their peers. Yet, some students may enter school with low mathematics achievement but progress at nearly the same rate as their peers. Ding and Davison (2005) suggested that students can enter school with lower initial achievement and manage to progress at a rate that is not statistically significantly different than their peers. However, because of their lower level of initial achievement, the students were unable to reach the same academic levels as their peers. Students identified as Limited English Proficient (LEP) and students in special education have particular difficulties closing the initial gap in achievement (Ding & Davison). Initial achievement differences do not account for all the subsequent variation in student academic progress and achievement; however, it puts the student at a disadvantage early in the educational pipeline.

Environmental Factors Affecting Mathematics Growth

Students enter the public school system with one or more factors that may contribute to lower academic achievement in mathematics (Rathbun et al., 2005). Specifically, coming from poverty, status as a racial or cultural minority, having parents who did not complete high school, and having parents who speak a language other than English in the home can negatively influence academic achievement and growth (Croninger & Lee 2001; Natriello, McDill, & Pallas, 1990; Rathbun & West, 2004). The aforementioned risk factors for lower academic achievement can possibly affect any student regardless of race or ethnicity. When considering the effects of language on mathematics performance students whose native language is not English had substantial difficulties on the mathematics portion of the NAEP (Abedi, Lord, & Plummer, 1997). Due to these factors, initial academic differences in some cases are more profound for some groups of students as opposed to others.

The underachievement in mathematics for African American students is widely discussed in extant literature due to the perceived gap (Lubienski, 2002) in academic performance between African American students and their White counterparts. The factors frequently discussed in literature are related to the cultural, educational, and psychological barriers linked to the education of African Americans in society. While there is widespread agreement about the role each of these plays in the schooling experiences of African American students, there are no conclusive findings about which factors have the greatest influence on their mathematics performance in school.

There is an excess of research about the affect cultural differences have on students of color during their educational experiences. Specifically, their cultural background sometimes determines to what extent these students have enough cultural capital (Bourdieu, 1977) to navigate an educational system that may be foreign to them upon entering school. That is, Roscigno and Ainsworth-Darnell (1999) discovered that lower SES Blacks lack the resources to take family trips, purchase computers, and other resources needed to be successful in the classroom. In an effort to close the achievement gap, Ladson-Billings (1995) and Tate (1995) discussed the need for more culturally relevant pedagogy for African American and Latino students. Arguably, students of color are often challenged by the instructional practices presented by White teachers unfamiliar with their students' cultural backgrounds. Consequently, the classroom becomes an environment where students of color are tracked into lower academic tracks (Ladson-Billings, 1997) and decline in taking upper-level mathematics courses in high school and college (Davenport, Davison, Kuang, Ding, Kim, & Kwak, 1998).

As the dialogue continues regarding the widening mathematics achievement gap between Black and White students, some researchers find this dialogue creates an internal psychological dilemma for students of color and how they perform in classroom environments. The dilemma, according to Spencer, Steele, and Quinn (1998) is one to do with the perceptions held about groups of people (gender and race) and the targeted group not necessarily believing what is thought about them but simply having knowledge that these thoughts exist to the extent that it hampers performance. Steele (1992, 1997) argued that minority students are more likely to experience what is known as stereotype threat because their intellectual ability continues to be compared to that of high-achieving White and Asian students. Moreover, Osborne (2001) studied the effects of anxiety as a way to explain racial and gender differences in academic achievement of high school seniors and found that White students had less anxiety in mathematics as compared to their African American and Latino counterparts and the difference was significant with respect to women learning mathematics.

Aside from being considered as racial or ethnic minorities, many Hispanic students are considered Language Minorities (LM) as well. Hispanic LM students represent a highly diverse population in terms of socioeconomic status, linguistic and cultural background, level of English proficiency, amount of prior education, and instructional program experience (Crawford, 2004). The aforementioned circumstance may have a significant effect on student mathematics achievement and growth. Hispanic LM students enter kindergarten with fewer mathematics skills compared to other non-Hispanic LM students, and these trends persist at least through the first grade (Ready & Tindal, 2006). This result suggests that LM status is an added challenge for Hispanic students in the primary grades.

Saxe (1988) suggested that the effect of language on mathematics achievement could be direct (intrinsic) or indirect (extrinsic). Among the extrinsic influences of language on mathematics achievement are: (a) entry mastery, (b) opportunities to learn, (c) motivational factors, and (d) measurement factors. According to Saxe, the effects of their language status on classroom activities influence LM students' mathematics achievement. For example, entry mastery is associated with the effects of different degrees of language competence on the influence of mathematics instruction for some students. Many LM students receive mathematics instruction from a bilingual mathematics educator who may not be as competent in mathematics as other educators, which in turn affects the student's opportunity to learn. Hispanic LM students face a different set of challenges than other students whose home language is not English, due in part to the unfortunate reality that a larger percentage of Hispanic LM students are affected by poverty (Collins & Shay, 1994; Iceland, 2003; Jargowsky, 1997; Staveteig & Wigton, 2009). The possible lack of financial resources may influence the Hispanic LM students' access to mathematics as well as language resources to enhance their academic performance.

Ruiz (1988) proposed that there are three basic orientations toward language diversity; these orientations were "language as a right," "language as a problem," and "language as a resource." Furthermore, Ruiz suggested that school programs in the United States have a history of embracing the language as a problem perspective. Thus, instead of utilizing the student's native language as a foundational resource, many educators as well as policymakers perceive that language is the problem. All children deserve an opportunity not only to learn but also to be successful regardless of their race, culture, socioeconomic status, or native language. Examining the early trends in mathematics achievement and growth of the previously mentioned populations of interest may lead to a better understanding of the current and past trends in mathematics achievement, as well as vital instructional knowledge for educators and administrators. Nonetheless, the education of all students despite initial achievement level or environmental risk factors is the responsibility of the instructional staff and school administration to overcome. Thus, the factors that influence student mathematics achievement and growth at the school level are discussed in the following section.

Research Questions

1. What are the initial differences among different ethnic groups' achievement in mathematics on measurement of academic progress (MAP) in grades 3, 4, and 5?
2. What are the differences among different ethnic groups' growth in mathematics as measured by MAP in grades 3, 4, and 5?
3. What are the initial differences in mathematics achievement of non-English proficient (NEP), limited English proficient (LEP), fluent English proficient (FEP), and native English speaker Hispanic students on MAP in grades 3, 4, and 5?
4. What are the differences in mathematics growth of Hispanic students with varying English language proficiencies as measured by MAP in grades 3, 4, and 5?

Methods

Participants

Measure of Academic Progress (MAP) growth scores were available for 2110 third graders (1010 female students and 1100 male students), 2209 fourth graders (1037 female students and 1172 male students), 2161 fifth graders (1056 female students and 1105 male students) in a large urban district during the 2005–2006 academic year. The data collected were from two time periods to estimate learning trajectories for Asian (4.1%), Black (20%), Hispanic (51.8%), and White (24.1%) students in grades 3, 4, and 5. The Native American students, who comprised only a small proportion of the district (i.e., 0.8%), were not included in the analyses because of the imprecision in their parameter estimates. Of all the students, 58.6% were eligible for free lunch with the highest percentage being within Hispanic students (75.1%), and 8.5% were eligible for reduced lunch with the highest percentage again being among Hispanic students (9.6%). Special education students comprised 9.2% of all students in the dataset. These special education students were categorized as students with emotional (1.0%), perceptual (6.2%), and speech/language disabilities or disorders (2.0%).

Instrument

The MAP—a multiple-choice, computer-based assessment administered to students in grades 2–10 (The Northwest Evaluation Association [NWEA], 2000)—is administered statewide in Colorado. The NWEA created the MAP for Colorado aligned with the Colorado State Academic Standards. It is different from conventional assessments because the MAP was developed to place student achievement and item difficulties on the same scale based on item response theory. The MAP is one measure for determining if a student has made one year's growth in reading and mathematics. The test-retest reliability of the mathematics portion of MAP for grades 3 through 5 in Spring 2002 changed from the mid .80s to the low .90s.

Table 1
Descriptive Statistics on Achievement and Percent Growth Rates Across Grades 3, 4, and 5 by Gender and Ethnicity

Grade	Ethnicity	N	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	% Growth Mean
3	Asian	77	187.12	12.98	200.70	12.79	109.19
	Female	39	187.51	11.03	199.74	10.44	98.73
	Male	38	186.71	14.86	201.68	14.91	119.92
	Black	413	179.68	11.85	192.30	12.99	92.40
	Female	192	181.59	11.28	193.93	12.01	92.23
	Male	221	178.03	11.59	190.87	13.93	92.54
	Hispanic	1133	178.52	11.39	191.60	12.58	93.69
	Female	543	179.28	10.76	192.07	11.73	92.62
	Male	590	177.82	11.91	191.16	13.31	94.68
	White	487	186.86	12.85	199.48	13.03	100.73
	Female	236	186.23	11.91	198.32	12.16	96.17
	Male	251	187.45	13.67	200.57	13.74	105.01
4	Asian	109	198.94	13.50	209.48	15.79	110.9
	Female	56	198.34	12.29	208.90	14.78	112.3
	Male	53	199.57	14.77	210.19	16.90	109.42
	Black	449	190.32	12.87	199.47	14.17	88.27
	Female	211	190.65	13.25	200.18	14.28	92.23
	Male	238	190.03	12.54	198.85	14.07	84.77
	Hispanic	1126	190.27	12.67	199.99	13.31	93.52
	Female	532	190.15	11.93	199.86	12.31	93.62
	Male	594	190.38	13.31	200.10	14.16	93.43
	White	525	198.02	12.58	207.50	13.77	98.50
	Female	238	197.39	11.76	207.41	13.45	105.23
	Male	287	198.55	13.21	207.58	14.06	92.92
5	Asian	78	206.65	13.61	216.51	15.79	109.08
	Female	39	207.97	13.31	219.59	13.19	127.57
	Male	39	205.33	13.94	213.44	17.65	90.61
	Black	435	198.89	12.51	207.82	13.79	94.78
	Female	196	199.46	11.65	208.79	13.32	100.09
	Male	239	198.41	13.18	207.03	14.14	90.42
	Hispanic	1100	198.82	12.09	207.36	12.95	90.46
	Female	537	198.90	11.71	207.70	12.36	93.3
	Male	563	198.74	12.46	207.03	13.49	87.75
	White	548	206.41	12.56	216.22	13.60	107.56
	Female	284	206.74	10.41	216.34	11.72	106.18
	Male	264	206.06	14.53	216.08	15.39	109.05

Results

Differences in Mathematics Achievement and Growth by Ethnicity

The pre- and post-test means and *SD*s by gender within each ethnic group at each grade level are reported in Table 1. Standard deviations are an artifact of the number of items on a test. Therefore, when scores are high so too are the standard deviations. For example, on a 5-point Likert scale one would expect standard deviations less than 1, whereas on an I.Q. test where the range is between 80 and about 130, one would expect a standard deviation in the tens place. To determine the differences between ethnic groups' mean scores on the pretest in third grade, which is the first administration of MAP, confidence intervals were calculated. In general, across all analyses, Asian and White students outperformed Black and Hispanic students. As shown in Figure 1, Black and Hispanic students have statistically significantly lower mean scores as compared to their Asian and White peers. In third grade, Hispanics have a much smaller variance as compared to the other three groups but also a noticeably lower mean.

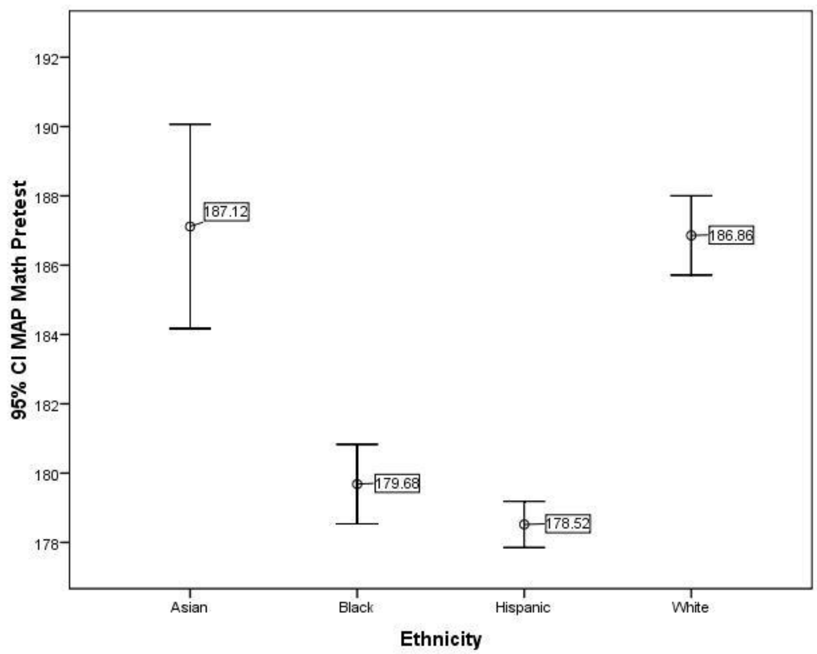

Figure 1. 95% CIs for mean achievement scores in grade 3 by ethnicity on MAP pretest.

When examining the analyses for fourth and fifth grade, the trend of Asian ($M_{4th\ grade}$ = 198.94, SD = 13.50; $M_{5th\ grade}$ = 206.65, SD = 13.61) and White ($M_{4th\ grade}$ = 198.02, SD = 112.58; $M_{5th\ grade}$ = 206.41, SD = 12.56) students outperforming Black ($M_{4th\ grade}$ = 190.32, SD = 12.87; $M_{5th\ grade}$ = 198.89, SD = 12.51) and Hispanic ($M_{4th\ grade}$ = 190.27, SD = 12.67; $M_{5th\ grade}$ = 198.82, SD = 12.09) students held with no noticeable closing of the gap the confidence intervals change little and were not depicted. The fifth-grade analysis showed the width of the CIs remained consistent across grades, and the relative performance also remained consistent without any noticeable difference in the achievement gap.

The mean and the standard deviation of growth rates as measured in percentages across grades 3, 4, and 5 are presented in Table 1. To compare the growth rate of students from different ethnicities across grades 3, 4, and 5, CIs around the mean growth rates are provided in Figure 2. These mean growth rates were calculated in percentages. The state established an expected growth for each student based on a set of normative tables that differentiate the average growth by grade level and starting point score. Mean growth percentages were calculated based on what percent of the state established growth the student achieved. For example, if a student whose expected growth rate was 12 points had exactly 12 point increase would have a mean growth of 100%.

One important characteristic of CIs is they encourage meta-analytic thinking and contribute to cumulative knowledge (Thompson, 2006). Thus, CIs help us to compare the growth rates of each ethnic group across grades 3, 4, and 5 and obtain a plausible range of the population parameters. A comparison of the first three CIs in Figure 2, which belong to Asian students in grades 3, 4, and 5 respectively, provides evidence that their mathematics growth rate measured by MAP in the population may range from 96.75% to 121.62%. For White students this range is from 100.45 to 105.76 as seen in Figure 2. When the CIs in Figure 2 for Black and Hispanic students are compared within themselves, the plausible range for population mathematics growth may range from 86.74 to 96.15 for Blacks and from 90.27 to 95.29 for Hispanics. It is clear in this analysis that Black and Hispanic students are not achieving their expected growth rates.

Differences in Mathematics Achievement and Growth by Gender Within Each Ethnicity

To determine the differences in mathematics achievement between genders within each ethnic group, CIs for mean scores on the pretest in third, fourth, and fifth grades are provided in Figures 3, 4, and 5, respectively. In third grade, gender difference was found within Black and Hispanic students. Third-grade Black and Hispanic male students preformed statistically significantly lower than their female counterparts on MAP pretest. However, such a gender difference was not found in fourth or fifth grades.

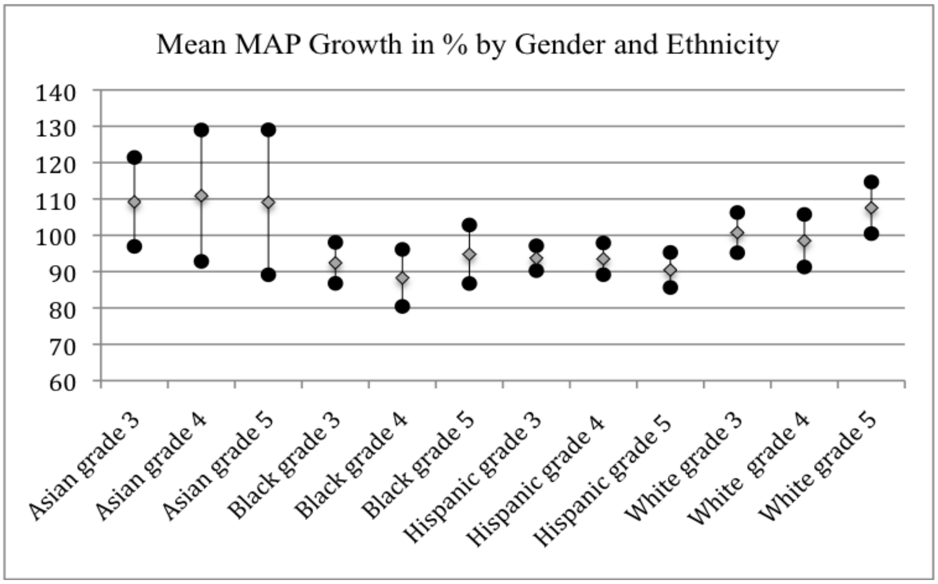

Figure 2. 95% CIs for mean mathematical growth rates across grades 3, 4, and 5 by ethnicity as measured by MAP.

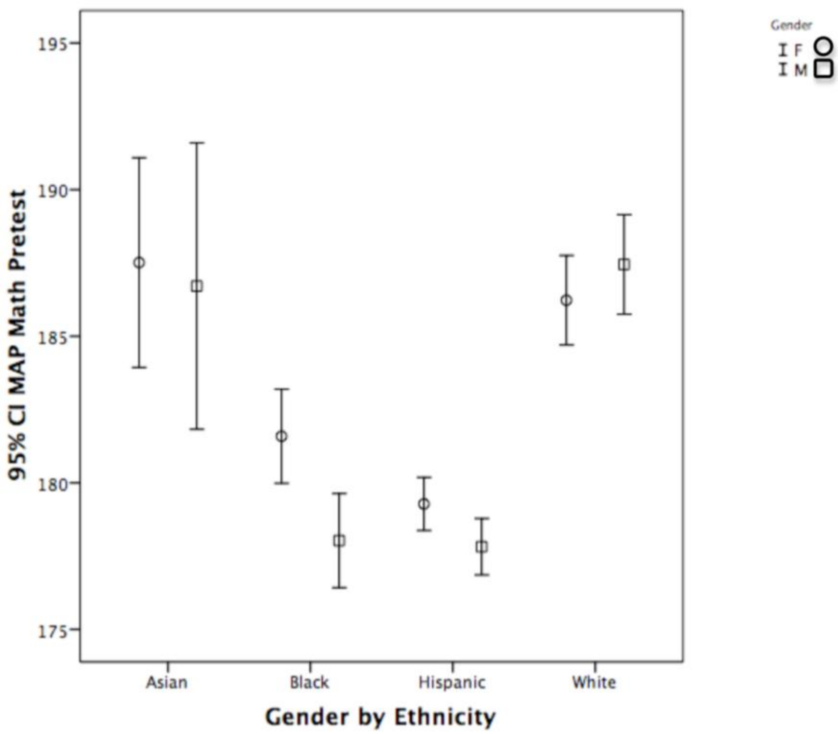

Figure 3. 95% CIs for mean achievement scores in grade 3 by gender and ethnicity on MAP pretest.

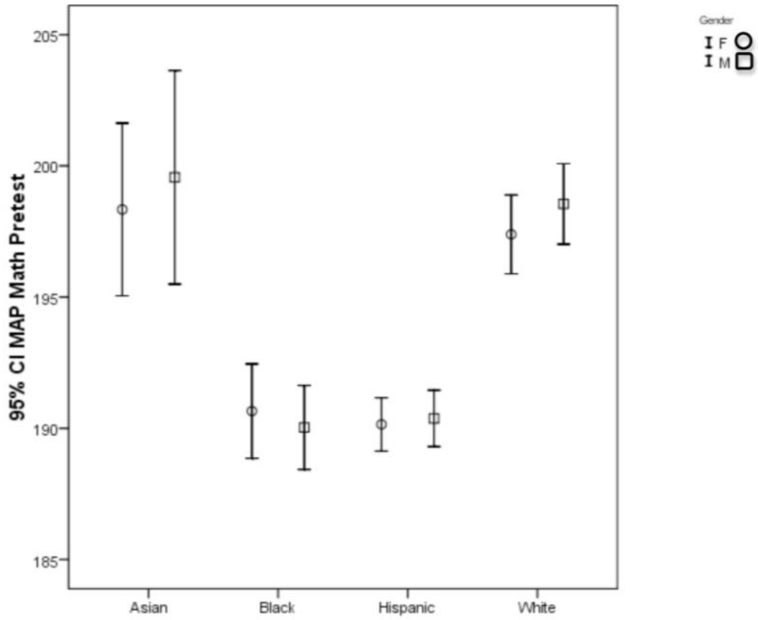

Figure 4. 95% CIs for mean achievement scores in grade 4 by gender and ethnicity on MAP pretest.

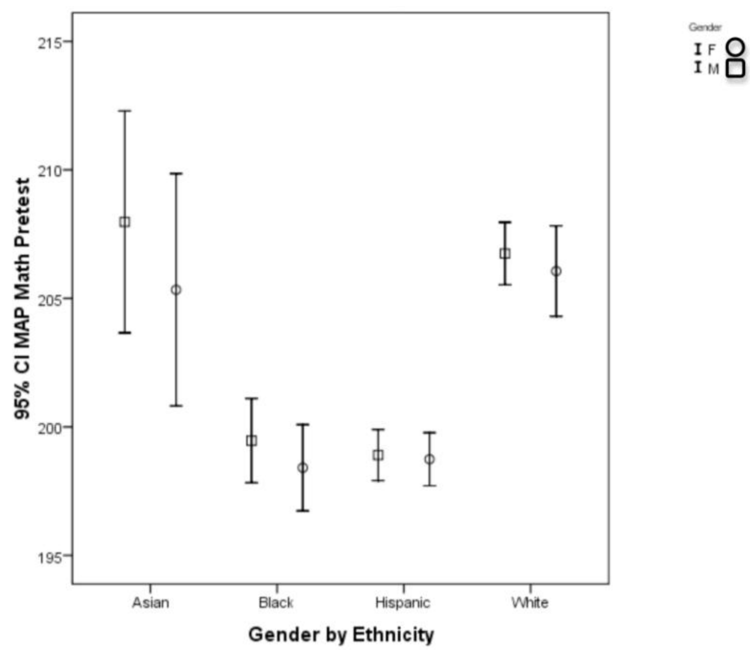

Figure 5. 95% CIs for mean achievement scores in grade 5 by gender and ethnicity on MAP pretest.

To compare the growth rates of female and male students from different ethnicities across grades 3, 4, and 5, CIs around the mean growth rates are provided in Figure 6. No statistically significant difference between genders was found regarding their mathematics growth as measured by MAP in third, fourth, and fifth grades within each ethnicity.

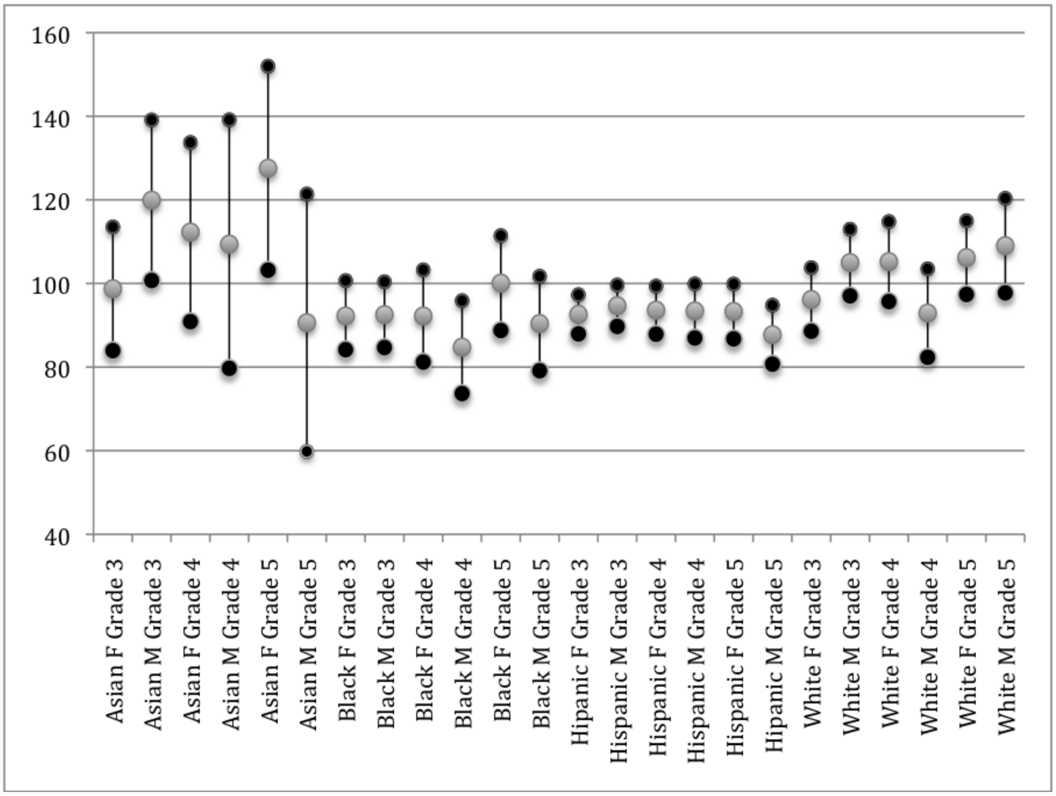

Figure 6. 95% CIs for mean mathematical growth rates across grades 3, 4, and 5 by gender and ethnicity as measured by MAP Growth.

Differences in Mathematics Achievement and Growth by SES Within Each Ethnicity

The SES status was determined by students' being eligible for free, reduced, or paid lunch. Across third, fourth, and fifth grades, students from low SES families (i.e., students eligible for free lunch) achieved statistically significantly lower than their peers who were from higher SES families (i.e., students who get paid lunch) within each ethnicity (see Figures 7, 8, and 9). White students from low SES families scored similar to their Hispanic and Black peers from high SES families across all grades.

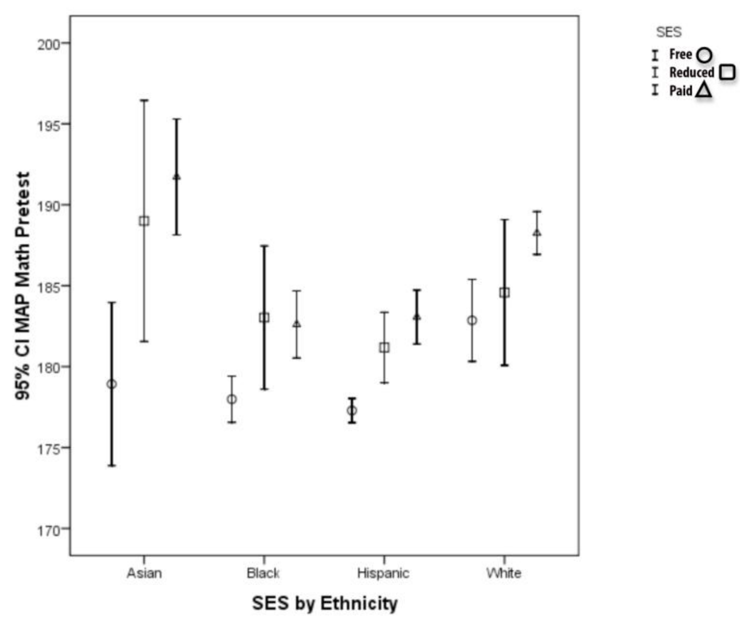

Figure 7. 95% CIs for mean achievement scores in grade 3 by SES and ethnicity on MAP pretest.

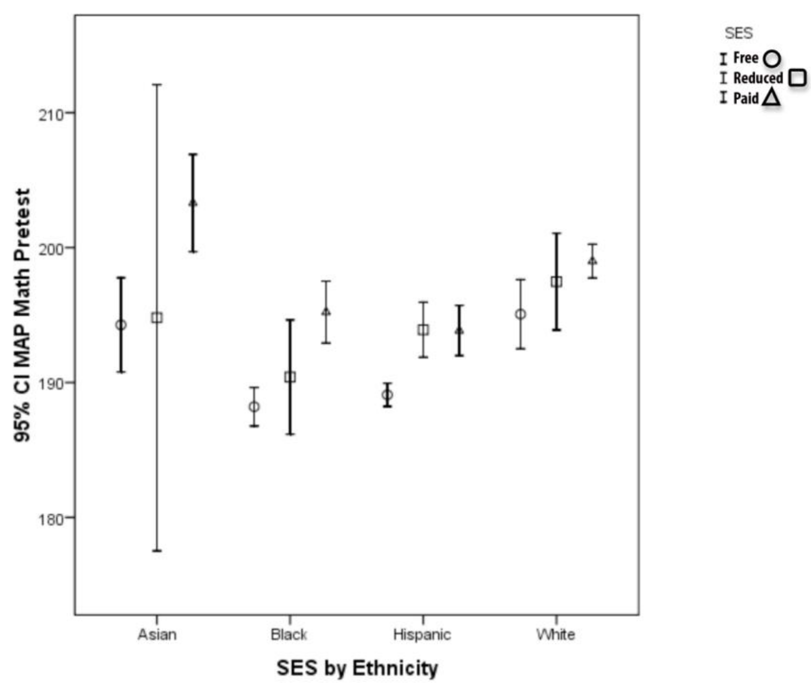

Figure 8. 95% CIs for mean achievement scores in grade 4 by SES and ethnicity on MAP pretest.

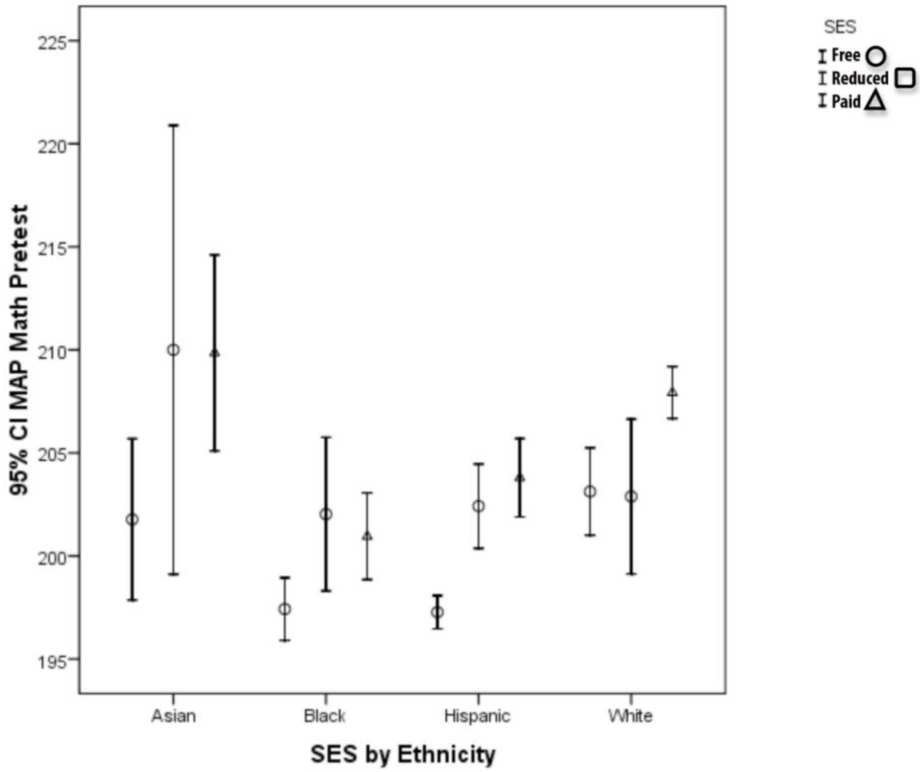

Figure 9. 95% CIs for mean achievement scores in grade 5 by SES and ethnicity on MAP pretest.

A comparison of the mean growth rates of Black and Hispanic students from low SES families across grades suggested that their mathematics growth rate measured by MAP in the population might range from 75.00% to 95.58% and from 88.32% to 94.46%, respectively, which were both below the expected growth. For Black and Hispanic students from higher SES families, the plausible range for population mathematics growth might range from 80.58% to 108.55 and from 91.52% to 102.11%, respectively.

Differences in Mathematics Achievement and Growth by English Language Proficiency Status Within Each Ethnicity

To examine the initial differences in mathematics achievement of non-English proficient (NEP), limited English proficient (LEP), fluent English proficient (FEP), and native English speaker students on MAP in grades 3, 4, and 5, CIs are provided in Figure 10. The narrower CIs for Hispanic students at all levels of English proficiency and for Black and White native speakers reflected the precision of the parameter estimates. In other groups, less precision was obtained due to the small sample sizes in each of these groups. Non-English and limited English proficient students from every ethnicity were statistically significantly behind their fluent English proficient and native speaker peers on the MAP pretest.

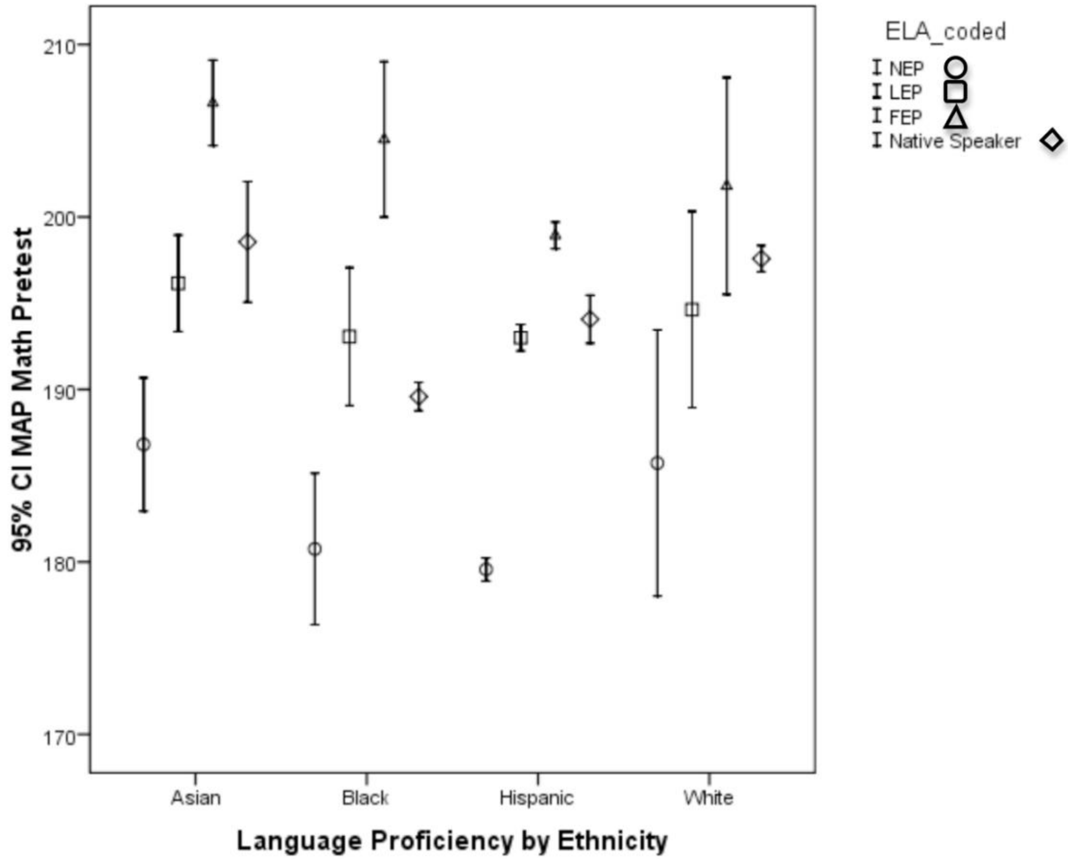

Figure 10. 95% CIs for mean achievement scores in grades 3, 4, and 5 by English language proficiency status and ethnicity on MAP pretest.

Conclusion

The growth rate analysis suggests Black and Hispanic students start each grade throughout elementary school behind their Asian and White peers in regards to their mathematics achievement. Moreover, Black and Hispanic students have mathematics growth rates that are lower than their expected growth rates (i.e., less than 100%) as well as less than their Asian and White peers making it virtually impossible for Black and Hispanic students in this Colorado district to catch their Asian and White counterparts.

It is worth noting that mathematics achievement and growth rate can be unstable; therefore, it may not truly reflect the performance of the students under investigation. Linn and Haug (2002) suggest that the achievement gain scores can be volatile and suggest that accuracy of results can be improved by combining results across different grades or years. In this study, achievement scores were combined across several grade levels; thus, the results are reasonably reliable.

Several factors may contribute to the achievement gap and persistent difference in mathematics growth presented in this study. In this discussion, initial achievement was presented as a possible factor contributing to the increasing mathematics achievement gap. The results of this study further suggest that SES has a dramatic affect on the mathematics achievement and growth of Black students. This result coupled with cultural differences that are exasperated in many traditional classrooms may inhibit the ability of many Black students from mathematics excellence. Students in ELL programs face different challenges that may contribute to their gaps in mathematics achievement and growth. Language is typically presented as a major contributing factor to the lack of growth in language arts as well as mathematics for non-native English speakers. Escamilla, Mahon, Riley-Bernal, and Rutledge (2003) claimed that the Hispanic achievement gap could not be attributed to language issues alone. The authors suggested that the structure of the assessment systems might inhibit Hispanic students' ability to meet the academic standards. In particular, the exemption process may prevent Hispanic students from receiving the same quality of instruction as other students in the same institution. Thus, many of these students are not given the opportunity to improve their skills because their learning is systematically constrained. One suggestion is to adjust the current educational policy that influences the systematic constraints on Hispanic students' achievement. Native language assessments, portfolios of academic progress, or language simplified test in English may be reasonable policy reform suggestions (Mahon, 2006). The Hispanic ELL's in this study may be confronted with very specific factors, but other factors can influence both Black and Hispanic student populations.

Educators, administrators, and parents should remain cognizant of the many factors that influence student mathematics achievement and growth. The results presented here indicate that a gap in the mathematics achievement of Black and Hispanic student begins early in their academic career. The results also suggest that if left unattended, this trend can continue because the mathematics growth rates of Black and Hispanic students are lower than their Asian and White peers. Furthermore, the results are far more detrimental to Black and Hispanic male students. Proper identification and remediation may help to better prepare these students for subsequent mathematics assessments. Furthermore, educational policy reform may enhance the learning opportunities of Hispanic students.

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