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10-23-2009

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Recommended Citation
Dexter, Emily and Simon, Jessica, "The Black-White Achievement Gap Amongst Struggling Readers: A Case Study of Early Intervention Outcomes in Massachusetts" (2009). *NERA Conference Proceedings 2009*. Paper 3.
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The Black-White Achievement Gap Amongst Struggling Readers: A Case Study of Early Intervention Outcomes in Massachusetts

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Paper Presented at the Northeastern Educational Research Association Annual Conference
Rocky Hill, Connecticut
October, 2009

The Black-White Achievement Gap Amongst Struggling Readers: A Case Study of Early Intervention Outcomes in Massachusetts

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A number of analyses of large data sets have suggested that the reading achievement gap between African American and White U.S. is negligible or small at school entry, but widens substantially during the school years because African American students show slower rates of growth in elementary and secondary school. Identifying when and why gaps occur, therefore, is a an important research endeavor. In addition, being able to predict which African American children are most likely to fall behind can contribute to efforts to close the achievement gap. This paper analyzes first grade and third grade data on African American and White children in Massachusetts who all were identified in first grade as struggling readers and enrolled in Reading Recovery—an individualized intervention. All the children were low-income and attending urban schools. Using Observation Survey data from first grade, and MCAS Reading data from 3rd grade, we found that the African American and White students made equal average progress while in first grade, but by the end of third grade showed a large gap in MCAS proficiency rates. We discuss the results in terms of school quality, reading development, dialect issues, testing formats, and the need to provide long-term support to vulnerable learners.

A persistent and disturbing equity issue in the U.S. is the achievement gap in both reading and math between White and African American students. Jenks and Phillips, in 1998, wrote that "reducing the Black-White test score gap would do more to move America toward racial equality than any politically plausible alternative" (p. 43). While part of the gap is associated with income gaps between White and African American families, the gaps cannot be entirely explained by socioeconomic inequality. Downey et al. (2004) and Fryer and Levitt (2004, 2005) analyzed data from the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K), and found that even controlling for income, White students made more progress in reading than African American students in the first few years of school. Murnane et al. (2005) analyzed data from the NICHD Study of Early Child Care and Youth Development (SECCYD) and found

Black-White gaps in ELA scores at kindergarten entry controlling for income, and gaps in the rate of growth in reading.

In this paper we examine a specific aspect of the Black-White reading gap issue by examining scores of *low-income urban African American students* in Massachusetts as compared with *low-income urban White students* in Massachusetts. To narrow the issue even further, we focus specifically on *students who are struggling readers at the beginning of first grade*—those who are at roughly the lowest quintile of the distribution in terms of first-grade entry reading skills. Thus we set aside consideration of the upper 80% of these low-income urban students in order to focus on the lowest achieving first graders, Black and White. To our knowledge, there is no analysis of the Black-White reading gap that focuses specifically on the students in both groups who enter first grade—a critical grade for reading instruction—with the lowest literacy abilities.

The data for this analysis comes from educational records of African American and White students in Massachusetts who were identified as needing a reading intervention in first grade and were enrolled in Reading Recovery. Reading Recovery is a one-to-one intervention program designed for struggling first-grade readers (Clay, 1993). All of the students we included in our study were identified as low readers at the beginning or middle of first grade and received Reading Recovery lessons in the fall, winter, or spring of first grade.

The goal of Reading Recovery is to accelerate the learning of low readers with daily, one-to-one, 30-minute lessons with a trained Reading Recovery teacher so they can catch up to grade level. Students have Reading Recovery lessons until they reach grade level, for a maximum of 20 weeks. Those who do not reach grade level within 20 weeks end their Reading Recovery lessons but are recommended for additional assessment and longer-term services, which could include placement in Special Education. In Massachusetts and in other states, roughly 75% of

children who have a full series of Reading Recovery lessons reach grade level within 20 weeks. Roughly 5% of all Reading Recovery students are placed in Special Education for reading and writing difficulties at the end of first grade.

In our study we asked the following research questions:

1. On average, did both the low-income White and low-income African American children begin Reading Recovery with similarly low literacy abilities, or did the African American children enter with even lower scores than the White low-income students? That is, was there a Black-White gap at the beginning of first grade amongst students identified as needing extra reading services?
2. On average, did low-income urban White and African American Reading Recovery students complete first grade with the same end-of-year reading abilities? That is, did the data suggest that the poor urban African American children enrolled in Reading Recovery learned as much as the poor urban White children in Reading Recovery?
3. On average, did the low-income urban White and African American Reading Recovery students perform as well on the MCAS reading exam at the end of third grade? That is, was there a Black-White achievement gap at the end of third grade as measured by the MCAS exam, two years after the students completed first grade?

Method

Participants and Data

The students included in our study were 236 low-income children who had participated in Reading Recovery in first grade in 2004-2005 and were enrolled in urban Massachusetts schools in 2006-2007 as third graders. 124 of the students were African American and 112 were White.

In order to obtain 3rd grade MCAS data on these students, we contacted districts in Massachusetts that had Reading Recovery in 2004-2005 and sent them a list of the students who had received Reading Recovery in their district that year. We received MCAS data from 39 districts which, in 2004-2005, collectively had enrolled 2,110 children in Reading Recovery. Many of the children in the original Reading Recovery cohort, however, did not have scores, primarily because many of them had moved. The districts, however, were able to provide third grade scores for 1,458 of the students—69% of the original cohort in these 39 districts.

From our Reading Recovery MCAS sample, we chose a subsample of all the White and African American children who lived in urban districts and qualified for free or reduced-price lunch, which included 112 White urban low-income children and 124 African American urban low-income children. It is important to emphasize that these children do not represent the full range of reading abilities of these demographic groups: children chosen to receive Reading Recovery lessons are those considered to be struggling readers in first grade.

All Reading Recovery students are assessed multiple times in first grade with the Observation Survey (Clay, 1993), a set of six assessment tasks. All Reading Recovery assessment data are stored in a national data center at The Ohio State University. The first grade literacy measures we included in our analyses were scores on four assessments of the Observation Survey tasks: 1) Hearing and Recording Sounds in Words, a phonemic awareness and letter-sound matching task in which children are asked to write a dictated sentence that has 37 sounds (possible range = 0-37), 2) Letter Identification, a task that requires children to identify all of the 54 upper and lower case letters of the alphabet (range = 0-54), 3) the Ohio Word test, a word recognition task that requires children to read aloud 20 high frequency words (range = 0-20), and 4) Text Reading Level, a task that requires children to read texts of increasing difficulty (range = 00-30). Text level 16 is considered grade level for the end of first

grade. We analyzed the students' scores on these assessments from two time periods in first grade—upon entry into Reading Recovery and at the end of first grade.

For the MCAS outcomes we used two variables that had practical significance--whether or not the child scored as "Proficient" or "Advanced", and whether or not the child scored in "Warning/Failure" or not. The variable—proficiency—is significant because the goal of every district is for all children to be proficient readers by third grade. The second outcome—failure—is significant because children who fail the MCAS are at high risk for retention.

Results

Table 1 below shows the average scores for the African American and White urban low-income students at three time points: at entry into Reading Recovery, at the end of first grade, and in the spring of third grade when they took the MCAS Reading test. We compared the group averages using t-tests to determine if the differences between the group averages were statistically significant. (In the table below, the differences that *were* statistically significant are starred.)

Table 1. First grade entry and end of year scores and third grade MCAS Reading scores for White and African American low-income urban children who had Reading Recovery lessons in 2004-2005 and took the third grade MCAS test in Spring 2007. (Standard errors are below group means in parentheses.)

	African American (n=124)	White (n=112)	T-stat (Sig.)
Entry into Reading Recovery (Observation Survey)			
Hearing and Recording Sounds in Words (phonemic awareness and letter-sound matching)	23.73 (0.96)	25.02 (1.02)	-0.92 (0.36)
Letter Identification	49.50 (0.48)	49.68 (0.484)	-0.26 (0.79)
Ohio Word Test (High-Frequency Word Recognition	6.79 (0.57)	6.87 (0.52)	-0.10 (0.92)
Text Reading Level	1.0 (1.1)	1.1 (1.0)	-1.57 (0.12)
End of First Grade (Observation Survey)			
Hearing and Recording Sounds in Words (phonemic awareness and letter-sound matching)	35.80 (0.21)	35.51 (0.33)	0.73 (0.46)
Letter Identification	53.39 (0.13)	53.34 (0.10)	0.29 (0.77)
Ohio Word Test (High-Frequency Word Recognition	18.56 (0.20)	18.24 (0.27)	0.95 (0.34)
Text Reading Level	15.89 (0.41)	15.85 (0.47)	0.07 (0.95)
Percent Reading Text Level 16 or higher	**66% (0.04)**	**70% (0.04)**	**-1.09 (0.28)**
3rd Grade MCAS Reading			
Percent Proficient or Higher on MCAS	18% (0.03)	37% (0.05)	-3.48** (0.001)
Percent Receiving Warning/Failure	27% (0.04)	17% (0.04)	1.79~ (0.05)

** p<0.01, ~p<.10

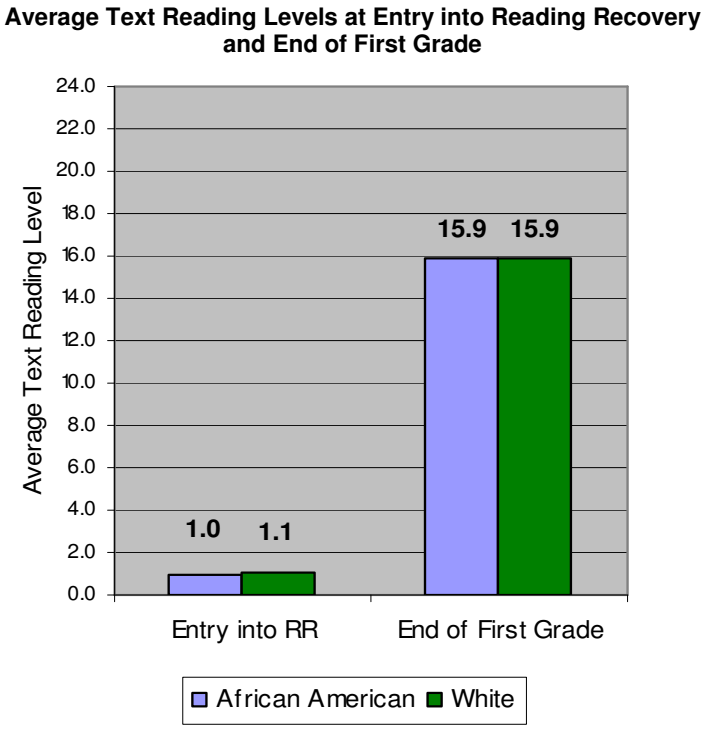
Entry scores: Upon entering Reading Recovery, the average scores for the African American and White low-income urban children were similar—there were no statistically significant differences. On average, children in both groups were able to write roughly 24 or 25 sounds out of 37 on the task of phonemic awareness and letter-sound matching, could identify almost all (50) of the 54 alphabet letters, could read only 7 of the 20 words on the word recognition test, and were able to read at one of the lowest Text Levels--Level 1 (one). I.e. there was no evidence of a Black-White gap when these students began Reading Recovery.

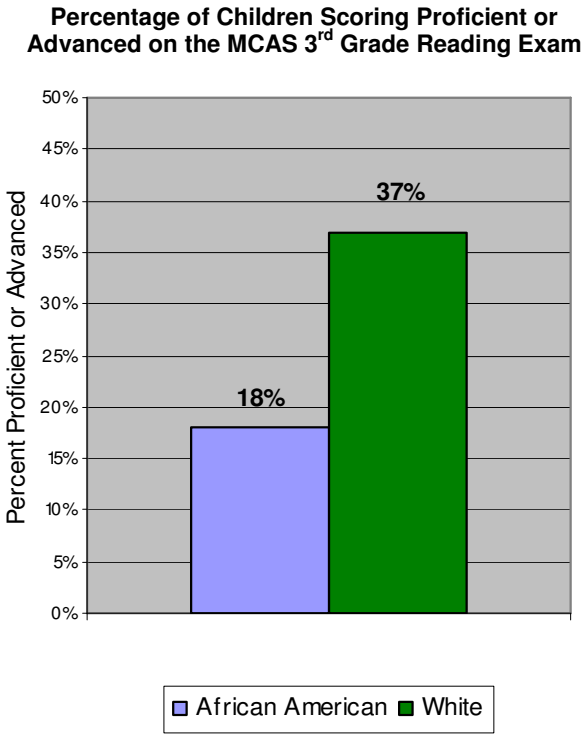
End of first grade scores: At the end of first grade there also were no statistically significant differences in the measured literacy skills of the White and African American low-income urban children. On average, children in both groups were able to identify almost all (36) of the 37 sounds in the phonemic awareness and letter-sound matching task, could identify almost every (53) alphabet letter, could read almost all (18-19) of the 20 words on the word recognition task, and could read at Text Level 16. Focusing specifically on the percentage of children in each group who were able to read at grade level at the end of first grade, 66% of the African American children and 70% of the White children were able to read at Text Level 16, a difference that was not statistically significant. These results suggest that, on average, African American and White low-income Reading Recovery children in urban Massachusetts schools made similar progress in first grade, and there was no Black-White literacy gap amongst these children at the end of first grade.

Third grade MCAS scores: At the end of third grade, more than one-third (37%) of the White low-income urban children who had been in Reading Recovery as first graders scored Proficient or Advanced on the MCAS Reading exam, which was approximately the same proficiency rate as for *all* low-income students in Massachusetts, regardless of whether they had been low, average, or high readers in first grade. (36% of all low-income third graders in the state scored Proficient or Advanced.) By contrast, only 18% of the African American low-income urban former Reading Recovery children scored Proficient or Advanced on the third grade MCAS Reading exam, a Black-White gap of 19 percentage points ($p<.01$). This was also much lower than the proficiency rate of *all* African American third graders in the state: 36% of *all* African American third graders scored Proficient or Advanced. In addition, slightly more African

American former Reading Recovery children received scores of Warning/Failure as compared with their White counterparts—27% vs. 17% ($p<.10$).

The two graphs below show the average Text Level scores for the White and African American children when they were in first grade, and the percentage of students who scored Proficient or Advanced on the MCAS Reading exam in third grade. Again, as these graphs show, there were no statistically significant differences in the literacy scores of the White and African American low-income urban Reading Recovery children as measured by the Observation Survey in first grade, but large differences as measured by the MCAS Reading exam at the end of third grade.





Discussion

This study examined the first and third grade reading abilities of 236 low income African American and White students attending urban Massachusetts schools. What was distinctive about the children in the study was that all had been identified as struggling readers in first grade and were enrolled in Reading Recovery. Examining the students' first grade Observation Surveys scores, we found no statistically significant Black-White differences when they entered Reading Recovery or at the end of first grade, suggesting that the two groups made equal progress in Reading Recovery and their first grade classrooms. However, we found a large Black-White gap in the students' third grade MCAS Reading scores even though all were low-income students attending urban schools who had finished first grade with similar skills. The White former Reading Recovery children showed an MCAS proficiency rate similar to that of *all* low-income third graders in the state (roughly 36-37% Proficient or Advanced), while the African American former Reading Recovery children showed a proficiency rate (of 18%) that was lower than the rate of the White former Reading Recovery students and lower than the rate for *all* African American students in the state (36%).

Obviously, the issue of the Black-White achievement gap in reading and how it develops over time is very complex and has been studied from many different perspectives. Some researchers have studied features of the home environments of poor African American children in attempts to explain Black-White achievement gaps (Yeung and Pfeffer, 2009). Others have focused on how the school environments of White and African American students differ (Murnane et al., 2006). Indeed in our study, the White and African American children, by and large, lived in different neighborhoods in different districts, and did not attend the same schools. Most of the African American students attended schools that were more than two-thirds Black and Latino/a, while most of the White students attended schools that were more than two-thirds

White. Much of the 3rd grade gap, then, might be the result of low income African American children having fewer home and neighborhood resources useful for school literacy, and attending lower quality schools located in poorer districts as compared with White low income students.

In addition to issues of the quality of schools available to White and African American children in Massachusetts, the results relate to three issues: 1) developmental changes in literacy development between first and third grade, 2) dialect differences between White and African American children that might contribute to differences in reading development, and 3) differences in the reading skills required by assessments such as the Observation Survey and the MCAS Reading exam.

Developmental differences between first and third grade readers. Our results showing African American students falling behind their White counterparts between the end of first grade and the end of third grade point out the importance of second and third grade instruction for reading development. Early interventions such as Reading Recovery target first graders because first grade is the first year of formal reading instruction. No Child Left Behind mandates third grade reading testing because this is considered the developmental period by which children should have acquired basic reading proficiency in order to begin higher level reading of more abstract material. Second and third grade can be seen as the grades in which children are required to consolidate the reading skills they acquire in first grade and to develop the automaticity and fluency required for higher level reading, as well as new vocabulary words found more often in print than in spoken language. Stahl et al. (2005) developed a second grade reading program with enhanced opportunities for children to develop fluency and found that many children enrolled in the program who began the school year reading below grade level were able to read at grade level by the end of the year. Apthorp (2006) described a third-grade reading program

with enhanced vocabulary instruction as having positive effects on end-of-third-grade reading abilities. These studies suggest the value of reading instruction that is carefully tailored to the developmental needs of children in second and third grade. White children, even those attending low-income urban schools, may have access to more developmentally specific reading instruction in second and third grade than African American children, which would be particularly beneficial to children who began school as struggling readers. Fryer and Levitt (2005) note that African American children are more likely than White children to have teachers who are novices in the field and therefore less expert at providing developmentally appropriate instruction.

Dialect differences between White and African American children. A second consideration is dialect. The earliest studies of Black English suggested that dialect differences might affect the reading development of children who speak African American Vernacular English (AAVE) (Labov, 1979). Downey et al. (2004) examined the Black-White gaps and SES gaps in the reading growth rates of children during the summer months when children were not in school and during the school year. They found that SES gaps appeared to increase during the summer but decrease during the school year, suggesting that school "equalized" SES differences so that gaps decreased when children were in school. However, they found the opposite pattern for Black-White gaps, which decreased during the summer months and increased during the school year, suggesting that school is a "source" of Black-White differences in abilities: "Something about early schooling leads black and white students down different paths" (p. 633). They suggest that linguistic differences between students and teachers may be a contributing factor.

Differences in assessments. A third issue in our study is that our first grade assessments were from the Observation Survey, a one-to-one assessment with several types of tasks, including a measure of how well children can read complete books written at a first grade level. The MCAS Reading exam, by contrast, is a multiple choice group test in which children primarily read excerpts of third grade texts and answer comprehension questions. This kind of test might be disproportionately disadvantageous for African American students. Supovitz and Brennan (1997), for example, found that when the abilities of second graders were measured with portfolios, a Black-White gap in abilities appeared smaller than when abilities were measured with standardized tests (but the gap did not disappear). Therefore the very large gap in MCAS scores may be particular to standardized test results.

In sum, our analysis suggests that African American and White low-income urban students who were identified as struggling readers in first grade and enrolled in Reading Recovery made equal progress during first grade, but showed a large gap on the third grade MCAS Reading exam. While many factors may have contributed to the large Black-White gap amongst this particular group of children—struggling readers who experienced a first grade early intervention, our analysis and other research studies suggest three contributing factors—differential quality of schools and in particular second and third grade reading instruction, dialect differences, and a disproportionate difficulty of the MCAS exam for African American students relative to other kinds of assessments.

Our analysis is limited by the relatively small size of our sample—124 African American students and 112 White students, and the fact that it was not a random sample of students. The findings, however, suggest the importance of future research on Black-White differences in the reading development of children who are identified as struggling readers in the early grades.

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