
Ability Grouping Practices in Elementary School and African American/Hispanic Achievement

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This study examines the impact of ability grouping practices on the achievement gains among African Americans and Hispanics during elementary school. Using data from the Early Childhood Longitudinal Study, the results strongly support the differential effects hypothesis of ability grouping. That is, students who are lower grouped for reading instruction learn substantially less, and higher-grouped students learn slightly more over the first few years of school, compared to students who are in classrooms that do not practice grouping. Overall, the results of our study call into question the notion that ability grouping is a beneficial practice in the earliest years of schooling.

Despite numerous efforts to reduce educational inequality in the United States, substantial racial gaps in achievement and attainment remain (Fryer and Levitt 2006). There is also evidence that these gaps may be present prior to kindergarten and persist throughout the elementary and secondary school years (Jencks and Phillips 1998; Lee and Burkam 2002). Recent empirical research suggests that while controlling for family socioeconomic status completely eliminates black-white reading achievement gaps at school entry, the gaps reemerge during the first few years of school and are quite substantial by the end of third grade (Fryer and Levitt 2006). In examining the causes of educational inequality, sociologists of education have concentrated heavily on the role of structural factors, including school characteristics and the organizational processes within schools. Central to this body of literature is the focus on opportunities to learn (i.e., ability grouping and curriculum tracking) as a key component in generating and perpetuating educational inequality across racial and socioeconomic groups. However, these research efforts have largely examined middle and high school students, in part due to the availability of

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longitudinal national surveys of adolescents. Further, while a substantial body of research has accumulated over the past few decades documenting the poorer educational outcomes experienced by African Americans, and to a lesser extent Hispanics, much of these efforts have sought to compare these students to white, often middle class, students (Hallinan 2001; Jencks and Phillips 1998; Kao and Thompson 2003). As a result, we have a limited understanding of what factors may uniquely explain why some African American and Hispanic students succeed and others fall further behind over time, particularly in the earliest years of schooling. More specifically, we do not know the extent to which early achievement gaps among African American and Hispanic children are influenced by differences in the learning opportunities provided by schools. This study addresses these shortcomings and extends our understanding of the mechanisms involved in shaping the early learning trajectories of racial and ethnic minority students by examining how sorting processes within schools, in the form of within-class ability group placement, affect the reading achievement trajectories of a national sample of African American and Hispanic students during the first few years of school.

Using data from the Early Childhood Longitudinal Study, we compare the reading achievement gains between students who are placed in high and low ability groups for reading instruction and students who are not grouped in the first and third grade. This study provides a more accurate assessment of the effects of placement by estimating the effects of ability group placement within classrooms of similar average reading abilities. The overall goal of this study is to investigate whether grouping practices constitute the most advantageous arrangement for African American and Hispanic students' early reading trajectories. That is, do lower-grouped and higher-grouped students experience reading achievement gains similar to nongrouped students, or does grouping exert a "differential effect" on reading achievement whereby lower-grouped students learn less than higher-grouped and nongrouped students (Hoffer 1992; Kerckhoff 1986)?

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Theories on Ability Grouping Practices

Over the past several decades, researchers interested in the stratification of learning opportunities have largely concentrated on the role of academic or ability grouping in schools. The nature of ability grouping practices varies by grade level and often by academic subject (Oakes 2005). In elementary school, students are often placed into small groups of similar “ability” within the classroom for instruction. Older students frequently experience between-class grouping for academic subjects, such as mathematics in middle school and curricular track placement or enrollment in advanced course work in high school based on the completion of prerequisite courses (Lucas 1999).

The practice of within-class grouping for instruction versus whole-class instruction in which students are taught as a single group is widely practiced in elementary schools across the United States (Henke et al. 1999; Pallas et al. 1994). In theory, all ability groups are taught material with similar academic content but at a pace and depth that reflects the ability level of the students in each group (Slavin 1987). Schools may engage in ability grouping practices as a way to improve overall achievement and reduce disparities among students with differing ability levels by allowing teachers to tailor their instruction according to the ability level of the class or group and thus avoid giving material that is too difficult or easy for most students (Slavin 1987). One of the main assumptions behind grouping practices is that teachers will be able to teach material at a faster pace and at a higher level for higher ability students and to provide more slower-paced instruction for lower ability students (Slavin 1987). Another assumption underlying this practice is that students will learn better if they are in a homogenous group in which instruction can be tailored to match their abilities (Kerckhoff 1986; Oakes 2005). Based on these assumptions, researchers theorize that grouped students may learn at least as much as nongrouped students and, on average, actually outperform students in nongrouped classrooms (Gamoran 1986; Hoffer 1992; Kerckhoff 1986). Several recent meta-analyses of experimental and quasi-experimental studies on the effects of within-class grouping at the elementary, secondary, and post-secondary levels lend support to this theory. Specifically, Lou and his colleagues (1996) demonstrated that students learn slightly more in academically homogenous groups within classes compared to heterogeneous groups or whole-class instruction (Kulik and Kulik 1992; Slavin 1987), although the effect size varied across the studies included in the analysis (Lou et al. 1996). In addition, Lou et al. (1996) found that the effects of grouping on achievement differed, depending on the level of initial academic ability. Specifically, lower ability students experienced greater achievement gains if they were in heterogeneous groups within classrooms. Among higher ability students there were no statistical differences in achievement between students who were placed in het-

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erogeneous or homogenous ability groups within classrooms (for reviews of this literature, see Schofield [2007]).

Rather than ability grouping practices constituting a rising tide that lifts all boats, some argue that the practice actually fosters educational inequality by providing fewer learning opportunities for lower-grouped students (Dreeben and Gamoran 1986; Hallinan 1994; Mickelson 2001; Oakes 2005; Pallas et al. 1994). A number of studies have shown that students in lower groups are not only taught at a slower pace but also exposed to less demanding material, experience greater repetition of material, and receive less encouragement from teachers (Eder 1981; Hollifield 1987; Oakes 2005; Oakes et al. 1990; Schwartz 1981). There is also evidence that with respect to reading instruction specifically, students in lower ability groups are taught more focused skills and are less likely to read phrases, sentences, and paragraphs that facilitate reading comprehension (Allington 1980; Chorzempa and Graham 2006; Hiebert 1983). Critics also argue that the process of ranking students and placing them into groups based on ability is a social phenomenon (Gamoran 1986; Hoffer 1992; Rosenbaum 1980). Certainly students are often aware of what “group” students are placed into and where in the status order this group falls (Eder 1983; Gamoran 1986). According to Hoffer (1992), if there are opportunities to move up into a higher group this practice could result in increased competition among students and improvements in overall student effort. However, mobility between ability groups is often limited, which can restrict lower-grouped students contact with “high-achieving peers” and friendship choices (Hallinan and Sørensen 1985). There is also evidence that ability groups for reading are even more stable over time among racial minority students. Hallinan (1996), for example, found that African American students were less likely than white students to be reassigned to a higher ability group during the school year. Thus, grouping practices may not result in increased overall achievement or even similar achievement gains between grouped and non-grouped students. Rather, grouping may have differential effects on student achievement depending on the particular ability group assignment. That is, lower-grouped students may learn less over time, and higher-grouped students may learn more compared to nongrouped students.

Prior Research on the Effects of Ability Grouping

Most research on ability grouping practices has examined the effects of between-class grouping and curriculum tracking in middle and high school, controlling for student racial and ethnic background, socioeconomic status, and prior achievement. By in large, these studies suggest that grouping has significant effects on learning. Students placed in lower level classes or tracks

learn less than they would if they were placed in higher level classes or tracks over time (Gamoran 1986, 1987; Gamoran and Mare 1989; Hoffer 1992; Kerckhoff 1986; Lleras 2008; Oakes 2005; Oakes et al. 1990). There is also empirical research which suggests that grouping produces differential effects on learning.

Using British data from secondary schools, Kerckhoff (1986) examined the achievement gains between students who were placed in high, middle, low, and remedial classes and students who were not grouped for instruction. Controlling for initial achievement, his results suggest that students in higher ability classes learn more and students in lower ability classes learn less in terms of reading and mathematics over five years compared to students who had not been separated into different ability groups for instruction.

Hoffer (1992) also found evidence of differential effects in his U.S. study of mathematics and science achievement gains in a national sample of seventh and eighth graders. Based on teacher reports and school-level curriculum data, he coded the level of each mathematics and science course within the schools where teachers reported a schoolwide practice of between-class ability grouping. Like Kerckhoff (1986), Hoffer (1992) analyzed the impact of being placed in a low, middle, or high group for instruction on achievement gains between seventh and eighth grade and eighth to ninth grade compared to not being grouped at all. The results for mathematics achievement strongly supported the theory of differential effects, whereby students in lower-grouped math courses learned substantially less over time, and students in higher-grouped classrooms learned more compared to nongrouped students. The results for science achievement showed a similar pattern of results.

A more recent study by Betts and Shkolnik (2000) using national data from the Longitudinal Study of American Youth examined whether the mathematics growth among students who were in schools that use ability grouping for mathematics differed from students in nongrouping schools. They also used information on the ability level of the class to better control for the unobserved heterogeneity within classes in grouping and nongrouping schools. Their results indicate that there are little to no effects of grouping for mathematics instruction on the mathematics growth among middle school students after taking into account differences in class ability levels. Their work suggests the importance of estimating the effects of ability grouping within classes of similar average ability levels in order to better estimate the effects of grouping for instruction. However, Betts and Shkolnik (2000) do not estimate the effects of being placed into different groups on individual mathematics growth; they estimate only the overall effects of being in a school that uses ability grouping versus one that does not employ ability grouping practices. Therefore, their study does not examine whether there are indeed differential effects of group placement on individual achievement.

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There have been fewer studies that have examined the impact of within-class grouping on student achievement in elementary school, particularly using national data. In one of the earliest studies, Gamoran (1986) examined data from first-grade students in classrooms using ability grouping for reading instruction across nineteen elementary schools in Chicago. He found that students who were placed in higher ability groups learned more words compared to students placed in lower reading groups by the end of first grade. In another study, Pallas and his colleagues (1994) examined data from nineteen elementary schools in Baltimore and found that students placed into higher reading groups during first grade not only scored higher on reading and mathematics standardized tests but also received higher grades compared to students in lower reading groups. In both of these studies, the comparison was between grouped students in higher versus lower reading groups. In contrast, our study examines whether there are achievement differences between students who are lower and higher grouped and students who are not grouped at all for reading instruction. This is similar to the comparisons made by Kerckhoff (1986) and Hoffer (1992) in middle school.

A more recent study by Tach and Farkas (2006) used national data from the Early Childhood Longitudinal Study—Kindergarten Cohort (ECLS-K) to examine the effects of ability grouping on student's reading achievement in kindergarten and first grade. Specifically, they estimate the impact of being in a higher versus lower group among students within grouped classrooms as well as the average effect of being in a grouped versus nongrouped class on reading achievement, controlling for initial achievement. Their results show that being in a higher group compared to a lower group in both kindergarten and first grade is associated with higher reading achievement. Their results also indicate that within ability-grouped classrooms African American and Hispanic students experience lower reading achievement if they are placed in lower versus higher reading groups during kindergarten and first grade compared to white students in grouped classrooms.

Overall, research on the effects of ability grouping practices have supported the notion of differential effects whereby lower-grouped students learn less and higher-grouped students learn more over time compared to nongrouped students. However, much of this research has been conducted on middle and high school students and has focused on mathematics and to a lesser extent other academic subjects, such as science or English. Thus, we do not know whether the same patterns hold true for reading achievement in the earliest years of schooling. Further, research has focused almost exclusively on comparisons between African American, and to a lesser extent, Hispanic and white students, with less attention paid to how ability grouping practices may reduce or increase learning gaps within these racial and ethnic groups. Our study builds on prior research by Hoffer (1992) and Kerckhoff (1986) and extends

the work by Betts and Shkolnik (2000) and Tach and Farkas (2006) by examining the effects of ability group placement (i.e., low or high) versus non-placement within classrooms of similar reading proficiency on the reading achievement growth among African American and Hispanic elementary school students.

Method

Data and Sample

This study uses data from the first and second follow-up surveys in the ECLS-K. The ECLS-K is a stratified nationally representative sample of approximately 22,000 children who attended kindergarten programs during the 1998–99 school year. The ECLS-K includes survey and testing data on students, as well as detailed information collected from their parents, teachers, and school administrators. To estimate over time the effects of ability group placement on reading achievement, the sample includes students from the 1998–99 kindergarten cohort who participated in the 1999–2000 first-grade and the 2001–2 third-grade follow-up years of the survey. For the purpose of this study, the sample includes African American ($n = 750$) and Hispanic students ($n = 886$) who had reading achievement test score data in kindergarten, first, and third grade and ability grouping information provided by their teachers in first and third grade. Further, only students who attended the same school for kindergarten, first, and third grade and who progressed on time to be in the third grade during the second follow-up survey were included in the sample.¹ In order to preserve the number of students in each sample, missing data on all other variables used in the analysis were dealt with using regression imputation methods provided in the statistical package STATA.²

While over 95 percent of this subsample of African American students had test score data for all three time points, approximately 25 percent of Hispanic students were dropped from the sample because of missing test score data at one of the three time points. It is important to note that most of the missing test score data for Hispanics was due to the fact that students who were not deemed English proficient at kindergarten entry were not given the reading test during the fall of kindergarten. Thus, the Hispanic students included in this study are likely to have stronger verbal skills compared to the Hispanic students who were missing test score data due to their non-English-proficient status. This study attempts to address this issue by controlling for whether the child speaks Spanish at home, whether the child was born in the United States, and family socioeconomic status, all of which are highly correlated

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with English proficiency (Reardon and Galindo 2007). However, caution should be taken when interpreting the findings for Hispanics in this study since they are only generalizable to those with minimal English proficiency. It would be important for future research to assess whether the effects of ability grouping on achievement also apply to Hispanic children with limited English at kindergarten entry.

Measures

Reading achievement.—The outcome variables for this study are the reading achievement tests administered to students in the spring of first and third grades. This study uses the standardized item-based-scoring reading achievement-scaled test scores (item response theory estimated), which provide an estimate of the longitudinal gains in the reading ability of the students in the sample (NCES 2002). The ECLS-K reading tests were designed to measure prereading and reading skills, including recognition of uppercase and lowercase letters, identification of the sound letters make at the beginning and end of words, reading comprehension, word recognition, and basic vocabulary.³

Ability group placement.—The main question examined in this study is whether there are differential effects of ability group placement on the reading achievement gains among African American and Hispanic students in elementary school. Therefore, two variables were created using information from the teacher survey to classify grouped students as being placed into either a lower ability or a higher ability reading group in first and third grade. Teachers in the first and third grade were asked whether they practiced ability grouping for reading instruction, how many groups they used in their classroom, and the students' placement in the reading groups (1 = highest placement). The number of reading groups reported by teachers ranged from zero to eight in first- and third-grade classrooms.

To calculate whether the student was placed in a lower ability group or a higher ability group in first grade, classes were selected based on the number of reading groups, and then the two dummy variables for the reading group placement were constructed relative to the number of reading groups used in the classroom. For example, children are considered to be in a lower ability group and assigned a value of one if the teacher reported that they were in the lowest group in a class of three reading groups or if they were in the lowest or second lowest group in a class of four reading groups, and they were assigned a value of zero otherwise. Children are considered to be in a higher ability group and assigned a value of one if the teacher reported that they were in the highest or second highest group in a class of three or four reading groups or if they were in the highest, second highest, or third highest group in a class

with five reading groups, and they were assigned a value of zero otherwise. Students who were in classrooms in which teachers did not report practicing ability grouping or reported only one reading group were assigned a value of zero and were considered to be nongrouped students. The nongrouped students are the comparison group in all the analyses.

Class ability.—Another important question addressed in this study is whether the differences in achievement gains between grouped and nongrouped students vary by class ability levels. To measure class ability we use an item from the first- and third-grade teacher questionnaire that asked teachers to report how many students in their class were reading below grade level. This number was divided by the total number of students in the class to obtain a distribution of the percentage of students who were reading below grade level based on teacher reports for each classroom in our sample. To differentiate classrooms of lower and higher levels of reading proficiency, the continuous variable was divided into two groups for first and third grade. A class was categorized as being of low ability if the percentage of students reportedly reading below grade level was greater than the mean of all classes in the total sample in the ECLS-K. Classes that were at or below the mean were classified as high ability. For example, a low ability classroom corresponded to those classes in which more than 20 percent of the students in the class were reading below grade level in the first and third grade.

Control variables.—The student characteristics included in the analysis as controls are student's sex and family socioeconomic background. Family socioeconomic status is measured by a continuous composite variable derived from the mother's and father's education, household income, and parental occupational status in the spring of first grade and the spring of third grade. In addition, the analysis for Hispanics included controls for whether the children were born in the United States and whether they speak Spanish at home since both of these factors may influence both achievement and ability group placement.

A number of additional variables were also used as controls in the analysis, including teacher ratings of student behavior, teacher characteristics, class size, school sector, and school racial composition. Teacher reports of student behavior have been shown to be associated with group or curriculum track placement, as well as student achievement (Ainsworth-Darnell and Downey 1998; Carbonaro 2005; Lleras 2008; Tach and Farkas 2006). Since prior learning-related behaviors may be associated both with achievement and with the child's chances of being placed into a lower or higher ability group in the next year, we include a measure of lagged student behavior in all analyses. To measure student behavior, we use an item in the teacher kindergarten and first-grade surveys that asks teachers to evaluate student's approaches to learn-

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ing, including the child's organization, learning independence, attentiveness, and ability to remain on task.

Prior research also suggests that measures of teacher quality are associated with student achievement gains (Greenwald et al. 1996) and may also serve as proxies for school expenditures (Betts and Shkolnik 2000). Years of teaching experience in all grades and a dummy variable indicating whether the teacher held a master's degree were included in the analysis. Class size and school sector may also be correlated with both achievement and whether teachers practice ability grouping for reading instruction in elementary school (Rivkin et al. 2005; Vander Hart 2006). Therefore, a continuous measure of class size and a dummy variable indicating whether the school is public are included in all the analyses.⁴

Finally, research suggests that students in schools composed of predominantly racial minority students may be more likely to experience ability grouping practices and also have lower achievement compared to students in racially mixed or predominantly white schools (Bankston and Caldas 1996; Garet and DeLany 1988; Lleras 2008; Oakes et al. 1990; Vander Hart 2006). Thus, we used an item available from the principal (school) survey on the percentage of the student body that was composed of minority students. Schools where 75 percent or more of the student enrollment was composed of minority students were coded as high minority schools (otherwise equal zero) and included as a control in all the analyses.

Analytic Strategy

There are two main goals of this study: first, to determine the overall effects of ability group placement (compared to nongrouped) on the reading achievement gains among African American and Hispanic elementary school students between kindergarten and first grade and between first and third grade, controlling for initial achievement, and, second, to compare the achievement gains experienced by students who are lower grouped and higher grouped to those of students who are not grouped for reading instruction but who are in classes of similar reading ability levels. The ECLS-K data used to examine these questions are multilevel, whereby students are nested within schools. Ordinary least squares analysis of such data may produce biased slopes and standard errors due to correlated error structures. Therefore, we use the *xtmixed* commands in STATA to estimate our equations. Like hierarchical linear modeling (HLM) software, *xtmixed* allows us to deal with the complex error structures associated with nested data and model the effects of student and school-level characteristics more appropriately (Stata 2005).⁵ Since the average sample of students per school

($n = 4$ for Hispanics; and $n = 5$ for African Americans) was relatively small, all variables were “fixed” in the analyses except for the intercept, which was allowed to vary randomly across schools.

The first objective of this study is to compare the reading achievement gains between kindergarten and first grade and between first and third grade among African American and Hispanic students who are lower grouped or higher grouped to those of students who are not grouped for reading instruction. The estimated equation predicting reading achievement gains between kindergarten and first grade takes the form of

$$\begin{aligned}
 (\text{reading achievement, first grade})_{ij} = & \beta_{0j} + \beta_{1j}(\text{reading achievement,} \\
 & \text{kindergarten})_{ij} + \beta_{2j}(\text{male})_{ij} + \beta_{3j}(\text{family socioeconomic status, first grade})_{ij} \\
 & + \beta_{4j}(\text{student behavior, kindergarten})_{ij} + \beta_{5j}(\text{teacher experience, first grade})_{ij} \\
 & + \beta_{6j}(\text{teacher master's degree, first grade})_{ij} + \beta_{7j}(\text{class size, first grade})_{ij} \quad (1) \\
 & + \beta_{8j}(\text{high minority school})_{ij} + \beta_{9j}(\text{public})_{ij} + \beta_{10j}(\text{average classroom reading} \\
 & \text{ability, first grade})_{ij} + \beta_{11j}(\text{lower group placement, first grade})_{ij} \\
 & + \beta_{12j}(\text{higher group placement})_{ij} + \varepsilon_{ij}.
 \end{aligned}$$

The estimated equation predicting reading achievement gains between first and third grade takes the form of

$$\begin{aligned}
 (\text{reading achievement, third grade})_{ij} = & \beta_{0j} + \beta_{1j}(\text{reading achievement,} \\
 & \text{first grade})_{ij} + \beta_{2j}(\text{male})_{ij} + \beta_{3j}(\text{family socioeconomic status, third grade})_{ij} \\
 & + \beta_{4j}(\text{student behavior, first grade})_{ij} + \beta_{5j}(\text{teacher experience, third grade})_{ij} \\
 & + \beta_{6j}(\text{teacher master's degree, third grade})_{ij} + \beta_{7j}(\text{class size, third grade})_{ij} \quad (2) \\
 & + \beta_{8j}(\text{high minority school})_{ij} + \beta_{9j}(\text{public})_{ij} + \beta_{10j}(\text{average classroom reading} \\
 & \text{ability, third grade})_{ij} + \beta_{11j}(\text{lower group placement, third grade})_{ij} \\
 & + \beta_{12j}(\text{higher group placement, third grade})_{ij} + \varepsilon_{ij}.
 \end{aligned}$$

In both equations, student achievement measured in the spring of first and third grade is modeled as a function of prior achievement and prior student behavior, as well as teacher experience, class size, school characteristics, average classroom reading ability level, and ability group placement. The effect of ability group placement on achievement gains is estimated controlling for school racial composition and classroom reading ability levels,

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as well as the other predictors in the model, and the comparison is to nongrouped students.

The second objective of the study is to compare the reading achievement gains of African American and Hispanic students who are lower grouped or higher grouped to students who are not grouped for reading instruction but are within classrooms of similar average reading abilities. We estimate a model of achievement that includes a series of dummy variables interacting group placement (lower group, higher group, nongrouped) with class ability level (low, average, high). This provides better estimates of the effects of ability group placement on achievement gains by reducing the likelihood that some of the effects are due to unobserved characteristics of the class. Teacher's subjective assessments of classroom reading abilities also provide a way of controlling for unobserved heterogeneity related to the probability of ability group placement and student achievement gains. The assumption is similar to that of the propensity score method in that by comparing grouped students to nongrouped students within classes of similar reading proficiency, we hope to take into account some of the differences between these students that may influence their achievement and improve our estimation of the effects of group placement on achievement (Betts and Shkolnik 2000).

The estimated equations for these models are the same as equations (1) and (2), except that classroom reading ability, β_{10j} , is dropped from the models, and the interactions between group placement and class reading ability levels are added. In each of the models, estimated separately for African American and Hispanic students, one of the nongroup \times class ability level interaction terms is deleted so that the comparison group is the nongrouped student within a classroom of similar reading ability levels. For example, to estimate the impact of student's who are lower grouped compared to nongrouped students within classrooms of low reading ability on the reading achievement gains between first and third grade, the estimated equation takes the form of

$$\begin{aligned} (\text{reading achievement, third grade})_{ij} = & \beta_{0j} + \beta_{1j}(\text{reading achievement, first} \\ & \text{grade})_{ij} \dots + \beta_{2j}(\text{lower group, low class ability})_{ij} + \beta_{3j}(\text{lower group, high} \\ & \text{class ability})_{ij} + \beta_{4j}(\text{higher group, low class ability})_{ij} + \beta_{5j}(\text{higher group, high} \\ & \text{class ability})_{ij} + \beta_{6j}(\text{nongrouped, high class ability})_{ij} + \varepsilon_{ij}. \end{aligned} \quad (3)$$

Students who were not grouped in classrooms with lower reading ability levels are the group that is excluded from the equation and represent the comparison group in this example.

Results

Descriptive Results

Table 1 presents the means and standard deviations of all the variables used in our analysis separately for African American and Hispanic students. In our sample, the practice of ability grouping for reading instruction was widespread during the first grade, with a little more than 70 percent of teachers practicing within-class grouping among both African Americans and Hispanics. By third grade, approximately 59 percent of African Americans and 50 percent of Hispanics were ability grouped for reading instruction.⁶ On average, African American and Hispanic students were in first- and third-grade classrooms where one in four students were reading below grade level. Among Hispanic students, 95 percent were born in the United States, and a little over one-third reported speaking Spanish at home.⁷ Overall, teachers had fourteen years of total teaching experience. A little over one-third of teachers in both the African American and the Hispanic samples reported having a master's degree or higher. Approximately 54 percent of African Americans and 41 percent of Hispanic students were in elementary schools with more than 75 percent minority student enrollment, and the majority attended public schools.

Group Placement Effects on Achievement Gains

The first set of results presented in table 2 shows the impact of ability grouping practices on the reading achievement gains among African American and Hispanic elementary school students. All models include the lagged reading test score and student behavior measure from the previous time period, as well as the student's sex, family socioeconomic background, teacher characteristics and high minority school and public school variables. In addition, the models for Hispanics include controls for whether the students speak Spanish at home and whether they were born in the United States. The models estimate the overall effects of being placed in a lower or higher ability group versus no group for reading instruction on the reading achievement gains among African American and Hispanic students from kindergarten to first grade (model 1) and from first grade to third grade (model 2). Since the models also include a control for the percentage of students reading below grade level in the classroom, the comparison group is average students in a classroom with average reading proficiency who were not grouped for reading instruction in the first grade.

The results from models 1 and 2 indicate that lower-grouped students have

TABLE 1

Means and Standard Deviations for Variables Used in the Analyses Predicting Reading Achievement among African American and Hispanic American Elementary School Students: ECLS-K

VARIABLES	AFRICAN AMERICAN		HISPANIC	
	Mean	SD	Mean	SD
Reading achievement:				
Reading achievement test, spring kindergarten	37.03	11.11	37.72	11.18
Reading achievement test, spring first grade	65.11	16.65	67.76	18.07
Reading achievement test, spring third grade	101.20	16.89	108.17	17.68
Ability group placement:				
Lower reading group placement, first grade	.24	.43	.26	.44
Higher reading group placement, first grade	.47	.50	.47	.50
Lower reading group placement, third grade	.23	.42	.17	.38
Higher reading group placement, third grade	.36	.48	.33	.47
Class ability level:				
% of students reading below grade level, first grade:				
Low class ability, first grade	.24	.15	.23	.18
High class ability, first grade	.47	.50	.39	.49
% of students reading below grade level, third grade:				
Low class ability, third grade	.53	.50	.61	.49
High class ability, third grade	.26	.16	.25	.17
Low class ability, third grade	.45	.50	.41	.49
High class ability, third grade	.55	.50	.59	.49
Student characteristics:				
Male	.45	.50	.48	.50
Family socioeconomic status, first grade	-.38	.73	-.20	.70
Family socioeconomic status, third grade	-.39	.70	-.23	.69
Speak Spanish at home			.35	.48
Student learning behavior:				
Student behavior (teacher report), kindergarten	3.09	.67	3.19	.63
Student behavior, first grade	2.98	.70	3.13	.66
Teacher and class characteristics:				
Teacher experience, first grade (years)	14.11	10.68	13.65	9.75
Teacher experience, third grade (years)	14.61	10.57	13.50	9.86
Master's degree, first grade	.36	.47	.34	.46
Master's degree, third grade	.38	.48	.33	.47
Class size, first grade	20.88	3.96	21.24	4.37
Class size, third grade	20.69	3.95	21.87	4.57
School characteristics:				
High minority school	.54	.50	.41	.49
Public school	.87	.34	.77	.42
N	750		886	

TABLE 2

Overall Effects of Ability Grouping on Reading Achievement Gains among African American and Hispanic Students in First and Third Grade: ECLS-K, 1998–2002

	KINDERGARTEN TO FIRST GRADE		FIRST TO THIRD GRADE	
	African American	Hispanic	African American	Hispanic
Constant	33.87*** (3.67)	34.07*** (3.94)	57.54*** (4.37)	62.01*** (4.20)
Lagged reading score	.94*** (.04)	1.00*** (.04)	.50*** (.03)	.52*** (.03)
Male	-.94 (.80)	-.49 (.78)	.99 (.94)	-1.13 (.85)
Family socioeconomic status	1.80** (.61)	1.41* (.67)	1.46 ⁺ (.77)	3.15*** (.72)
Lagged student behavior	2.18*** (.66)	1.18 ⁺ (.69)	3.64*** (.77)	2.43*** (.71)
Teacher experience	.01 (.04)	.04 (.04)	.06 (.05)	-.01 (.04)
Master's degree	.54 (.97)	1.92* (.91)	-.79 (1.13)	-1.11 (.95)
Class size	-.34** (.12)	-.17 (.11)	.11 (.14)	.25** (.10)
High minority school	-.71 (.95)	-2.29* (1.03)	-2.79* (1.15)	-3.36** (.98)
Public school	-.28 (1.43)	-.68 (1.27)	-.15 (1.74)	.25 (1.25)
% of students in class reading below grade level	-8.71*** (2.93)	-9.29*** (2.56)	-2.91 (3.37)	-8.30** (2.82)
Ability group placement:				
Lower reading group	-3.86** (1.18)	-4.45*** (1.16)	-4.27** (1.33)	-2.83* (1.26)
Higher reading group	2.73** (.99)	2.27* (1.07)	2.25* (1.15)	3.87*** (1.01)
<i>N</i>	750	886	750	886

⁺ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

significantly lower achievement gains and that higher-grouped students have greater achievement gains by first grade and third grade, respectively, compared to nongrouped students. These findings are consistent for both African American and Hispanic elementary school students and suggest that students who are lower grouped for reading instruction learn substantially less from kindergarten to third grade compared to students who are not grouped in average reading ability classrooms. Further, the effects of ability group place-

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ment are of a different magnitude. That is, African American students in lower reading groups are losing more than higher-grouped students are gaining in terms of reading achievement compared to nongrouped students. For example, the estimated negative effect on reading achievement gains of being lower grouped for reading instruction in third grade is about .23 of a standard deviation of nongrouped students. The positive effect of being higher grouped is .12 of a standard deviation above nongrouped African American students. The same is true for Hispanic students but only in first grade. By third grade, the negative effect on reading achievement of being lower grouped among Hispanic students is .15 of a standard deviation below nongrouped students, while the positive effect is .21 of a standard deviation above nongrouped students. These initial results seem to strongly support the differential effects theory of ability grouping practices found by Hoffer (1992) and others (Kerckhoff 1986).

In addition to the effects of ability group placement, higher socioeconomic background and more favorable teacher reports of student learning-related behaviors in the classroom are associated with greater achievement gains for both African American and Hispanic students between kindergarten and third grade. Greater class size is associated with lower reading achievement gains among African American first-grade students. The results also show that African American and Hispanic students have much lower reading achievement gains between first and third grade if they are in predominantly minority schools. The percentage reading below grade level in the class is associated with significantly lower reading achievement gains during first grade for both African American and Hispanic students. However, by third grade the effect on African American students is reduced substantially and loses significance.

Grouping Effects on Achievement Gains within Class Ability Levels

The prior analyses compared lower-grouped and higher-grouped students to students in classrooms with average levels of reading proficiency. The results of table 2 suggest that higher-grouped African American and Hispanic students learn more and lower-grouped students learn less compared to nongrouped students during the first four years of elementary school. The next set of analyses extend these findings to examine whether the impact of grouping on the early reading achievement trajectories among African American and Hispanic elementary school students varies depending on the ability level of the classroom. The ability group measure in the ECLS-K is a teacher report of which reading group the student was placed in relative to the ability level of the classroom. Therefore, a more appropriate test of the impact of lower group

placement and higher group placement compared to nongrouped is within classrooms of similar reading abilities.

Models 1–4 in table 3 add a series of dummy variables interacting reading group placement and nonplacement with the two levels of class reading ability constructed from the teacher item that asked, “How many students in the class are reading below grade level?” For example, if the students are lower grouped and in a lower ability class level, then they are coded as a one; otherwise, they are coded as a zero. The interaction terms are then entered into the models predicting achievement, each time excluding one of the interactions between nongrouped and class ability level. In doing so, the coefficients of interest in each of the models are the lower-grouped and higher-grouped interaction terms with the class ability level excluded. For example, in models 1 and 3, since the nongrouped, lower class ability term is excluded from the model, the reading achievement gains between students who are lower grouped or higher grouped within classrooms of lower reading ability (depicted in bold) are compared with nongrouped students who are also in classrooms of lower reading ability. Models 2 and 4 compare the reading achievement gains in first and third grade, respectively, between grouped students and nongrouped students within classrooms of higher ability in first and third grade, respectively.⁸ The models estimated in table 3 also control for all of the variables shown in table 2, with the exception of percentage of students in the class reading below grade level. The models in the left half of the table are for African American students, and the right half depicts the reading achievement gains among Hispanic students.

Among African Americans, the results in model 1 suggest that students who are lower grouped for reading instruction in lower ability classrooms actually have significantly lower reading achievement compared to nongrouped students in the same kind of classroom in first grade. In classrooms of lower ability, being placed in a higher reading group is associated with significantly greater reading achievement gains compared to being nongrouped in these kinds of classrooms. The estimated coefficients in model 2 indicate that even in classrooms where the reading proficiency levels are higher, lower-grouped students still learn significantly less than nongrouped students. However, the results also suggest that there are no significant advantages of being higher grouped for students within classes of higher reading ability, compared to nongrouped students. Indeed, the estimated negative effect on reading achievement of being lower grouped versus nongrouped is quite substantial in higher ability classes (.23 of a standard deviation) compared to the positive effect of being in higher reading groups for instruction (.12 of a standard deviation).⁹ This suggests that the practice of grouping does benefit African American students slightly during the first grade, but only if they are placed in higher reading groups within classrooms where more than 25 percent of the students

TABLE 3

Effects of Ability Grouping on Reading Achievement Gains among African American and Hispanic Students in First and Third Grade within Similar Class Ability Levels: ECLS-K, 1998–2002

	AFRICAN AMERICANS		HISPANICS	
	Kindergarten to First Grade	First to Third Grade	Kindergarten to First Grade	First to Third Grade
Constant	30.18***	57.27***	29.18***	61.07***
Group placement × class ability level:				
Lower reading group, low class ability	–3.07*	–4.70**	–4.25**	–4.02**
Lower reading group, high class ability	–.85	–3.14	–.89	1.72
Higher reading group, low class ability	3.57**	2.39 ⁺	3.27*	4.21**
Higher reading group, high class ability	5.73***	1.99	4.77**	4.92**
Nongrouped, low class ability		–3.49*		–3.23 ⁺
Nongrouped, high class ability	3.49*	.12	3.23 ⁺	1.95

NOTE.—All models also include lagged reading achievement, sex, family socioeconomic status, lagged teacher rating of student behavior, teacher experience, master's degree, class size, minority school, and public school. The models for Hispanic students include additional controls for whether the students speak Spanish at home and whether they were born in the United States.

⁺ $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

are reading below grade level (i.e., low ability classrooms). However, being lower grouped in first grade is associated with much lower reading achievement compared to not being grouped for reading instruction, especially in classrooms with higher levels of reading proficiency.

In the estimation of reading achievement at the end of third grade, being lower grouped is associated with substantially lower reading achievement gains among African American students, particularly compared to nongrouped students in low ability classrooms (model 3). Like the estimates of first-grade reading achievement, students who are higher grouped only benefit compared to nongrouped students when they are in classes with lower levels of reading ability. That is, being higher grouped does seem to help African American students in classrooms where the reading proficiency level is lower. However, in these same kinds of classrooms, being lower grouped is associated with significantly lower achievement gains. The estimated negative effect of lower group placement on reading achievement in third grade is actually highest among African Americans in lower ability classes (.26 of a standard deviation) compared to nongrouped students.¹⁰ Indeed, the predicted achievement gap between lower-grouped and higher-grouped students in low ability classrooms in the third grade is higher (6.94) than the estimated overall gap estimated in model 3 of table 2, where the comparison was nongrouped students in average ability classes (6.55). These results suggest that grouping may exacerbate achievement gaps among African American students in the earliest years of schooling, particularly in classrooms where more than 20 percent of the students are reading below grade level compared to students in nongrouped classes. It is also important to note that the gaps between lower-grouped and higher-grouped students, regardless of the reading proficiency levels of the classroom, persist or increase between kindergarten and third grade. But within nongrouped classrooms, the reading gap between students in lower and higher reading proficiency classrooms actually disappears by third grade. That is, among African American students who are not grouped for reading instruction, there are essentially no differences in the reading achievement gains among students in lower reading proficiency and higher reading proficiency classrooms by the third grade.

The right half of table 3 presents the findings for Hispanic students. The pattern of results is similar to those for African American students, with a few notable exceptions. First, Hispanics who are lower grouped in classes of lower reading proficiency have significantly lower reading achievement compared to nongrouped students in similar classrooms, particularly in the first grade. Among African Americans, lower group placement was also negatively associated with lower achievement in lower ability classes, but the effect was substantially larger in the third grade. Second, unlike African Americans who experienced no significant benefits to being higher grouped when they were

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in classrooms of high ability in the third grade, Hispanic students who are in high ability classrooms do benefit significantly from being placed into higher reading groups in the third grade. Third, Hispanic students who are lower grouped in high ability classrooms in the third grade do not experience negative effects on achievement compared to nongrouped students, which is the case among African Americans. Also interesting is that in high ability classrooms in the third grade, Hispanics who are higher grouped are gaining much more than the lower-grouped students are losing compared to nongrouped students. Fourth, the estimated achievement gaps between lower- and higher-grouped Hispanic students are greatest in low ability classrooms in third grade, a finding that mirrors that for African American students. Finally, as was the case for African American students, the reading gap among nongrouped Hispanic students in low and high ability classrooms becomes smaller over the first few years of elementary school, whereas the reading gap, in low ability classrooms in particular, between lower- and higher-grouped students actually increases over time.

Overall, this more appropriate test of the effects of ability group placement on achievement provides strong support for the differential effects hypothesis of ability grouping (Hoffer 1992; Kerckhoff 1986). These results support Hoffer's (1992) findings that lower-grouped students lose more than higher-grouped students gain compared to nongrouped students in middle school and extends these to include classrooms of low and high ability in the earliest years of schooling. Our findings also suggest that ability grouping has substantial implications for the early learning trajectories of African American and Hispanic students. The findings presented in table 3 indicate that higher group placement does not substantially help African American students unless they are in lower ability classrooms during the third grade. Like the results for African Americans, the findings presented suggest that ability group placement also differentially affects the reading achievement gains experienced by Hispanic students in first and third grade. Placement in lower reading groups is associated with significantly lower gains in reading within classrooms of lower reading ability in both grades. Higher group placement results in significantly higher reading test scores, except in higher ability classrooms in first grade.

Conclusion

The early years of formal schooling constitute a critical period in children's cognitive development. It is in these early grades that all children are supposed to learn the basic skills and reading proficiency necessary to successfully complete higher levels of schooling. However, a significant number of students,

particularly racial minority students, never master early prereading and reading skills and as a result are at increased risk for problems later on in middle and high school (Alexander et al. 1997; Farkas 2000). Given the importance of reading proficiency during the earliest years of schooling and the persistent gaps in reading between different racial and ethnic groups, this study examined how ability group placement for reading instruction affected the reading achievement gains among African American and Hispanic students in the earliest years of schooling. Overall, the results indicate that African American and Hispanic students learn less over time if they are placed in lower reading groups for instruction compared to nongrouped students, and these findings are fairly persistent even after controlling for within-class differences in reading proficiency levels. The findings of this study challenge the theory that the widespread practice of grouping for instruction in elementary school is an advantageous practice for all students. Rather, our results strongly support the theory of differential effects found by Hoffer (1992) and others (Kerckhoff 1986) and suggest that ability grouping practices are particularly detrimental to the early reading trajectories of African American and Hispanic students who are lower grouped for reading instruction in first and third grade. Finally, the results challenge those of Betts and Shkolnik (2000) who found no effects of ability grouping on mathematics growth once class ability levels were taken into account.

In the analysis of reading achievement gains during the first grade, the results indicate that students who are lower grouped for reading instruction have substantially lower reading achievement gains compared to nongrouped African American and Hispanic students. Being higher grouped is associated with better achievement among African American and Hispanic students who are in classrooms where more than 20 percent of students in the classroom are reading below grade level. However, there are no significant differences between higher-grouped students and nongrouped students in reading achievement growth during the first grade within classrooms of higher reading ability. That is, there are no real benefits to being higher grouped in first grade if African American and Hispanic students are in classrooms where most of the students are reading at or above grade level. But, there are substantial negative effects on reading achievement gains for lower-grouped students in these classrooms. So, at least in these classrooms, grouping has an overall detrimental effect on learning compared to nongrouping.

The results for third grade suggest similar findings with regard to higher group placement, with the exception that Hispanics who are higher grouped in high ability classrooms do have significantly better reading achievement test scores compared to nongrouped students. The negative effects of lower group placement for African Americans and Hispanics are much greater if the students are also in low ability classrooms. These findings indicate that

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being lower grouped in low ability classrooms constitutes a unique double disadvantage, particularly for students in the third grade when the predicted reading achievement gaps between lower- and higher-grouped students are the greatest.

In sum, our findings show that African American and Hispanic students who are lower grouped for reading instruction learn substantially less and higher-grouped students learn slightly more over the first few years of school compared to students who are in classrooms that do not practice grouping. While this study is restricted to the effects of grouping on reading achievement, it is important to note that grouping may also affect other educational outcomes not measured in the current study. Indeed, recent empirical research has shown that grouping and tracking also have significant effects on student effort and engagement (Carbonaro 2005; Lleras 2008; Tach and Farkas 2006). This study also does not measure specific teacher practices in the classroom beyond grouping. Including such measures in future research would certainly increase our understanding of the relationship between grouping for reading instruction and achievement among racial minority groups. Finally, prior research suggests that tracking may influence achievement trajectories differently depending on the racial composition of the school (Lleras 2008; Mickelson 2001). While this study controls for the racial composition of the school, it does not examine whether grouping affects African American and Hispanic students differently in high and low minority schools.

The educational problems experienced by African American and Hispanic students, particularly in middle and high school, have been extensively documented. African American and Hispanic youth continue to be at much higher risk of school failure and dropping out of school (Hallinan 2001; Kao and Thompson 2003; Ramirez and de la Cruz 2002). Studies also indicate that African American and Hispanic students are much more likely to leave elementary school having lower achievement compared to white students, and these disparities persist throughout middle and high school (Fryer and Levitt 2006; Jencks and Phillips 1998; Roscigno 2000). However, there are increasing reasons to believe that what happens in the earliest years of schooling may set students on a path to either success or increasing chances for failure (Entwisle et al. 1997; Phillips et al. 1998). Indeed, it has been estimated that at least half of the racial gaps in student achievement at the end of high school would be eliminated if early gaps were reduced (Jencks and Phillips 1998). The elementary school years, therefore, provide an important opportunity to influence early educational trajectories, particularly among at-risk students. The results of this study suggest that within-school processes such as ability grouping play an important role in shaping early reading skills and proficiency among African American and Hispanic students. Overall, our results call into

question the notion that ability grouping constitutes a beneficial practice for all students and instead suggest that the practice may exacerbate inequalities among African American and Hispanic students in the earliest years of schooling.

Notes

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1. The original ECLS-K sample included 3,015 Hispanic students and 2,469 African American students. Restricting the sample to only those students who remained in the same school for kindergarten, first, and third grade yielded a subsample of 1,841 Hispanic and 1,251 African American students.

2. Within the subsamples of African American and Hispanic students, the percentage of missing cases on most of the independent variables used in the analyses ranged from less than 1 percent to 7 percent. The exceptions were the variables used to measure family socioeconomic status in first and third grade, where the percent missing was 9 percent and 17 percent among African Americans and 8 percent and 13 percent among Hispanics, respectively.

3. The reading assessments were based on existing instruments, including the Children's Cognitive Battery, Peabody Individual Achievement Test—Revised, Peabody Picture Vocabulary Test 3, Primary Test of Cognitive Skills, and Woodcock-Johnson Psycho-Educational Battery—Revised.

4. We also restricted each of the subsamples to include only students in public elementary schools and reestimated each of the models. While the magnitude of the coefficients for ability group placement changed slightly, the direction of the effects and significance levels remained the same.

5. The models were also estimated using HLM 6.0, which yielded very similar results to those using *xtmixed*.

6. In the full ECLS-K sample, almost 70 percent of students were in classrooms that grouped for reading instruction in the first grade, and approximately 50 percent of the teachers in the ECLS-K practiced within-class ability grouping for reading in third grade.

7. These statistics partially reflect the fact that students who did not pass the oral English examination were excluded from taking the achievement test. In kindergarten, there are no reading achievement scores for nearly 30 percent of the Hispanic sample (West et al. 2000).

8. These models are similar to those conducted by Betts and Shkolnik (2000), who used principal reports of whether the school used ability grouping, and, thus, the comparison for their analysis was students who were in grouped versus nongrouped schools.

9. The standard deviation of the reading achievement test score among African American students who were nongrouped in high ability classrooms is 18.69.

10. The standard deviation of the reading achievement test score in the third grade among African American students who were nongrouped in low ability classrooms is 17.89.

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