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Understanding and Addressing the California Latino Achievement Gap
in Early Elementary School

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This paper is a revised and condensed version of a report submitted to the UC Latino Policy Institute (LPI) and presented at the Latinos in California II conference, September 11-13, 2003, Mission Inn, Riverside, California. The report was supported through a grant from the UC Latino Policy Institute and through research funding from the UC Linguistic Minority Research Institute. We would like to acknowledge the helpful comments of Jennifer Kuhn on the larger report. The views and opinions expressed do not necessarily represent those of LPI or the Regents of the University of California.

Abstract

One of the most pressing problems in California is improving student academic performance, especially the state's burgeoning Latino student population. This study examined the extent of the achievement gap between Latino and White students over the first two years of elementary school and the characteristics of students and schools that contribute to it. The analysis revealed that Latino students begin kindergarten at a considerable educational disadvantage relative to White students and the disadvantage increases during the first two years of school. Yet schools do little to widen or narrow these differences. Instead achievement differences increase when students are not in school. Consequently, to reduce the achievement gap will require both effective education policies and policies that address the overall social welfare of Latinos outside of school.

One of the most pressing problems in California is improving student academic performance. This is especially true for the state's Latino students, who now represent the largest ethnic group in the state,¹ but who generally have much lower achievement levels than White or Asian students.² If California is going to maintain its economic competitiveness in the global economy in the twenty-first century, it is going to have to effectively educate its increasingly diverse student population and particularly its rapidly increasing population of Latino students.

Historically, policymakers have attempted to improve academic achievement for all students irrespective of their ethnicity or other characteristics. But in 2001 the federal government enacted the *No Child Left Behind* (NCLB) Act, which requires states to document progress in eliminating the achievement differences among students who differ by poverty status, race, ethnicity, disability, and limited English proficiency (U.S. Department of Education, National Center for Education Statistics. 2003). These differences are sometimes referred to as the achievement gap. To date, most investigations of the achievement gap have focused on differences between racial and ethnic groups, particularly between majority White students and minority Black or Latino students (Jencks and Phillips 1998; Lee 2002).

This paper examines the extent of the achievement gap between California Latino and non-Latino White students in early elementary school; the individual, family, and school

¹ Between 1991-92 and 2001-02, Latino public school enrollment increased more than 50 percent, while White enrollment declined by 4 percent. Between 2001 and 2011, Latino public school enrollment is projected to increase by 20 percent, while White enrollment is projected to *decrease* by 16 percent (California Department of Finance, 2003).

² For example, in the 2003 California Standards Tests, only 20 percent of 5th grade Latinos and 15 percent of 8th grade Latinos were proficient in English language arts, compared to 54 percent of 6th grade non-Latino Whites and 47 percent of 8th grade non-Latino Whites (California Department of Education, 2004).

characteristics that account for those differences; and some educational policies that could help close the gap.³

EXPLAINING DISPARITIES IN ACHIEVEMENT

Researchers have long sought to understand and explain the vast racial and ethnic disparities in achievement that have always existed in the United States (Coleman et al. 1966; Jencks et al. 1972; Jencks and Phillips 1998; Lee 2002; Ogbu 1992; Rothstein 2004; Steinberg, Dornbusch, and Brown 1992; Thernstrom and Thernstrom 2003). Although numerous investigations have been undertaken, there is no consensus about the primary cause of these disparities. Rather, researchers have identified a wide range of factors that contribute to educational achievement and have tried to determine the extent to which differences in the amount or effects of these factors explain differences in achievement. These factors vary along two primary dimensions.

First, they vary with respect to whether they focus on the attributes of individual students or the attributes of the three primary settings in which they live: families, schools, and communities. Although student achievement is clearly the result of individual attitudes, behaviors, and experiences, these individual attributes are shaped by the institutional settings where people live (National Research Council and Institute of Medicine 2000). One challenge, therefore, is to determine the extent to which attributes of individuals explain educational outcomes versus the attributes of institutional settings. Addressing this challenge is important not only to better understand achievement differences, but also to help determine where policy interventions should be targeted. If educational outcomes can largely be explained by individual

³ To preserve space, the paper references a larger report that contains additional tables and a technical appendix (Rumberger and Arellano Anguiano, 2004).

attributes, such as ability and motivation, then policies should largely focus on altering the attributes of individual students and their families. If, however, educational outcomes can largely be explained by attributes of schools, such as the quality of the teachers and educational programs, then policies should largely focus on altering the attributes of schools. Addressing this challenge has also generated considerable controversy among scholars and researchers. The controversy began with the publication of the landmark “Coleman Report” in 1966. In the largest study of school effectiveness ever undertaken, Coleman found that schools only accounted for 5 percent to 38 percent of the total variation in student test scores among different grade levels, ethnic groups, and regions of the country (Coleman 1990: p. 77). Since that time, virtually every study of school effectiveness has confirmed that most of the variation in student achievement is attributable to differences between students (and their families), rather than differences between schools (Lee and Bryk 1989; Rumberger and Palardy in press; Reardon 2003). Yet despite the common interpretation that the Coleman report and subsequent studies show—that “schools don’t make a difference”—research clearly demonstrates that schools can still have a powerful effect on student achievement. For example, one recent study found that students learn twice as much in some high schools as in other high schools (Rumberger and Palardy in press). A more reasonable conclusion from existing research is that student achievement results both from the actions and attributes of individuals and from the actions and attributes of their families, schools, and communities.

Second, the factors vary with respect to the types of attributes they identify. Although a wide array of specific attributes has been identified, they primarily are of two types. The first type concerns material resources. Many researchers have argued that the major factor that explains differences in student achievement has to do with disparities in material resources and

conditions that exist among students, their families, and their schools (Armor 2003; Rothstein 2004). In the case of Latino students, for example, one critical resource is language. Students whose first language is not English have substantially lower levels of educational achievement than students from English-only backgrounds (Gándara, Rumberger, Maxwell-Jolly, and Callahan 2003). Since more than half of elementary-age Latino students in California come from non-English-only households (Rumberger and Gándara 2000: Table 1), this may help explain achievement differences between Latino and White students. But to what extent the relationship between language background and achievement is due to characteristics and practices of families (e.g., socioeconomic status [SES], literacy practices) and schools (qualified teachers, language of instruction, proper assessments) is less clear (Rumberger and Larson 1998).

Material resources within families and schools also matter. Research has consistently found that parental socioeconomic status, most commonly measured by parental education and income, is a powerful predictor of student achievement for students from all racial and ethnic backgrounds (Betts, Rueben, and Danenberg 2000; Entwisle, Alexander, and Olson 1997; Guo and Harris 2000; Lee 2002). Because child poverty rates for Blacks and Latinos are more than twice as high as child poverty rates for Whites (U.S. Department of Education, National Center for Education Statistics: 2003), these differences contribute to differences in educational achievement among these groups, especially during the summer (Entwisle and Alexander 1995; Lee 2002; Roscigno 2000). Differences in family income also contribute to differences in access to preschool, which has been shown to impact school readiness and may contribute to differences in early school achievement (Barnett 1995). School resources have also been shown to affect student achievement (Betts et al. 2000; Darling-Hammond, Berry, and Thoreson 2001), although

there is considerable controversy over whether financial resources matter or simply human resources, such as the quality of teachers (Hanushek 1997; Hedges, Laine, and Greenwald 1994). Because ethnic and language minority students are more likely to attend schools with fewer resources, including qualified teachers, these differences also contribute to differences in student achievement (Betts et al. 2000; Gandara et al. 2003).

The second category of attributes that contribute to student achievement are attitudes and behaviors of students, families, and school personnel. At the student level, research has shown positive attitudes and engagement toward learning, as well as pro-social and attentive behavior, promote learning in early elementary school for all students regardless of their socioeconomic status and racial backgrounds (Alexander, Entwisle, and Dauber 1993; Burchinal, Peisner-Feinberg, Pianta, and Howes 2002; Finn, Pannozzo, and Voelkl 1995). Although research has not demonstrated any marked racial differences in school attitudes and behaviors in early childhood, research has identified racial and ethnic differences in attitudes and behaviors among adolescents, including cultural differences in achievement motivation (Kao and Tienda 1995; Suarez-Orozco and Suarez-Orozco 1995). For example, Steinberg, Dornbusch, and Brown (1992) found in their research that Asians were more successful in school than other ethnic groups because of two cultural beliefs: (1) a belief that not getting a good education will hurt their chances for future success (rather than a belief that a good education will help their chances); and (2) a belief that academic success comes from effort rather than ability or the difficulty of the material. Yet to what extent these differences can explain observed differences in achievement among ethnic and racial groups in early elementary school is unclear.

Differences in parental beliefs and practices may also contribute to differences in student achievement. Among adolescents, research has found that parenting styles, such as

communication patterns and supervision between parents and their children, impact academic achievement (Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh 1987; Sui-Chu and Willms 1996). Yet while research has also found racial and ethnic differences in parenting practices, these differences do not appear to explain achievement differences (Sui-Chu and Willms 1996). Similarly, among young children research has demonstrated that parental beliefs and parenting practices, particularly literacy practices, contribute to the early academic achievement for all children (Bennet, Weigel, and Martin 2002; Guo and Harris 2000; Burchinal et al. 2002; Snow, Barnes, Chandler, Goodman, and Hemphill 1991). Research has also demonstrated that these beliefs and practices are related to both socioeconomic factors, such as income and parental education (Guo and Harris 2000) and cultural factors (Gallimore and Goldenberg 2001). For example, one longitudinal study of 121 Latino families found that Latino parents were more likely to practice a cultural model that emphasized moral development rather than literacy development (Reese and Gallimore 2000). Yet research has not been able to show that differences in parental beliefs and practices can explain differences in achievement. For example, Guo and Harris (2000) found that literacy materials (children's books) and practices (mother reading to child) mediated the effects of poverty on intellectual development, but these factors did not account for racial differences.

Finally, a number of school practices have been shown to affect student achievement, such as teacher beliefs and practices (Ashton and Webb 1986; Lee, Smith, and Croninger 1997; Lee and Smith 1999; Phillips 1997), school organization (Lee, Dedrick, and Smith 1991; Newmann, Rutter, and Smith 1989; Rowan, Raudenbush, and Kang 1991), and parental involvement (McNeal 1999; Sui-Chu and Willms 1996). Yet most of this research has focused

on high schools. There is little evidence on whether teacher beliefs and school processes impact achievement in elementary schools.

Differences in the relative importance of material resources versus attitudes and behaviors also have important implications for policy. If material resources are most important in affecting student achievement, then policies should be aimed at improving the material resources of students and the settings in which they live: their families, schools, and communities. If, however, attitudes and behaviors matter most, then policies should be aimed at improving the attributes and behaviors of students, their parents, and school personnel.

STUDY DESIGN

Sample

This study was conducted using data from a large, ongoing federal study known as the Early Childhood Longitudinal Study of the Kindergarten Class of 1998-99 (ECLS-K) (U.S. Department of Education, National Center for Education Statistics 2000). ECLS-K is a longitudinal study of a sample of about 20,000 kindergarteners who were enrolled in about 1,000 public and private schools in the fall of 1998. The present study is based on a sub-sample of 1,567 California students in 120 schools from the larger study who were followed through first grade and for whom comprehensive student, parent, teacher, and school data are available.⁴ Comparisons with available California State Department of Education data show that the sub-sample is quite representative of the state's population of kindergartners (See Rumberger and Arellano Anguiano, 2004, Table A1).

⁴ For more information on how the sample was selected, see (Rumberger & Arellano Anguiano, 2004). While there are a number of K-1 longitudinal weights in the dataset, we selected the sample associated weight, Y2COMW0, which provides child direct assessment data from fall-kindergarten, spring-kindergarten, and spring-first grade, in conjunction with parent and/or teacher data from spring-first grade, and one or more base year rounds of parent and/or teacher data (see U.S. Department of Education, 2002, p. 6).

Variables

The study examined two measures of educational achievement: reading and mathematics. The ECLS-K reading assessment measured basic skills (print familiarity, letter recognition, beginning and ending sounds, rhyming sounds, word recognition), vocabulary (receptive vocabulary), and comprehension (listening comprehension, words in context); the math assessment measured skills in conceptual knowledge, procedural knowledge, and problem solving.⁵ Each assessment was administered up to four times: in the fall and spring of kindergarten and in the fall and spring of first grade.⁶ Students identified by their schools or teachers as coming from a non-English background were given an English language proficiency test to see if they were able to understand and respond to the assessment items in English. At the time of each assessment, children who passed the language screener received the full ECLS-K direct assessment battery. Children who did not pass the language screener, but who spoke Spanish, were administered a Spanish translated form of the mathematics assessment. Other language minority children received a reduced version of the ECLS-K assessments.⁷ The present study used scale scores for reading and math in order to examine changes over time.⁸

A series of independent or predictor variables was created from the ECLS-K data to measure characteristics of students, their families, and their schools, identified in the literature review as important predictors of student achievement for this study.⁹

⁵ Both outcomes were assessed using a computer-assisted interviewing methodology that included the use of a small easel with pictures, letters of the alphabet, words, short sentences, numbers, or number problems (see NCES, 2001, p. 2-6).

⁶ Only one quarter of the students were assessed in the fall of first grade.

⁷ See U.S Department of Education (2001), 2-2 to 2-4, for more information.

⁸ As the ECLS-K user manual points out, gains at different points in the scale have different meanings in that they may connote qualitatively different reading activities (See U.S Department of Education, 2001, 3-11).

⁹ See Rumberger and Arellano Anguiano (2004), Table A2, for a complete list of the variables and how they were constructed.

Statistical Techniques

Because students in the ECLS-K data are nested within classrooms and schools, hierarchical linear modeling (HLM) was used in this study (Raudenbush and Bryk 2002: Chapter 6). In the current study, we tested a series of statistical models with different sets of predictor variables to estimate initial achievement in reading and math upon entry to kindergarten and achievement growth in reading and math during three distinct periods: kindergarten, first grade, and the summer in between (see Rumberger and Arellano Anguiano, 2004).

THE SIZE OF THE ACHIEVEMENT GAP

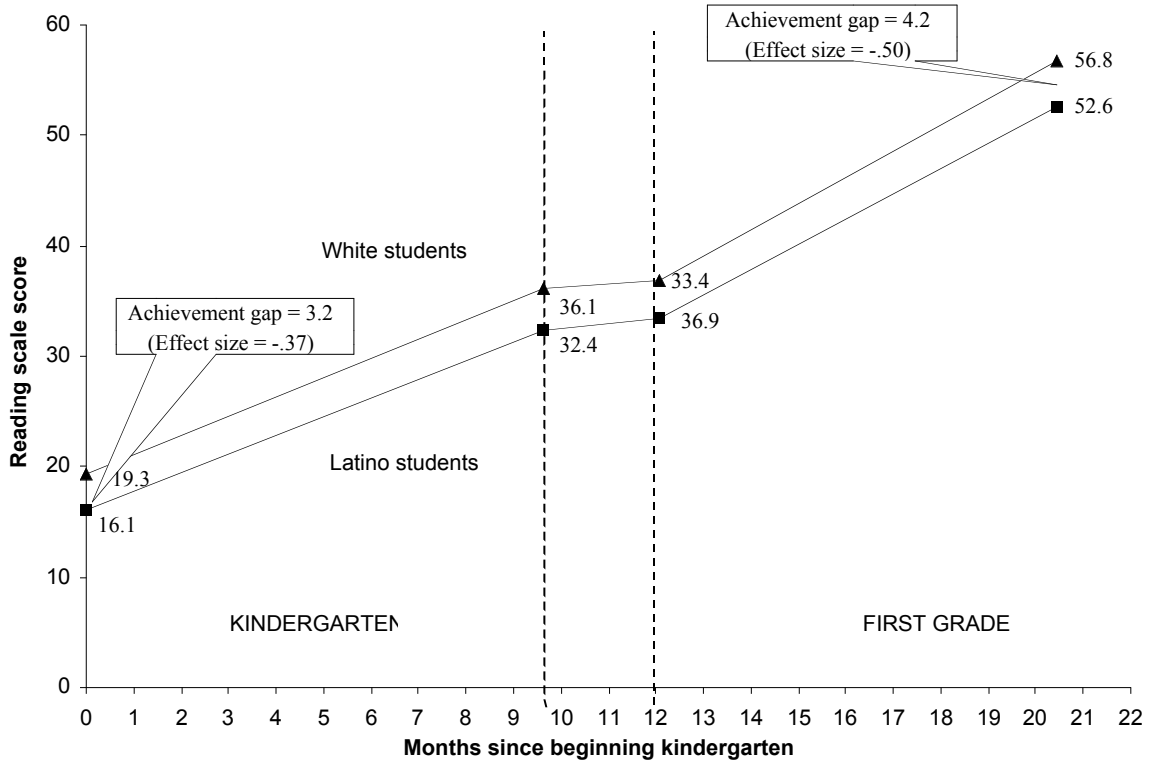
We first examined the size of the achievement gap by comparing differences in estimated achievement between Latino and non-Latino White students during the first two years of elementary school.¹⁰ Differences in reading achievement are illustrated in Figure 1. They show that Latinos scored 3.2 points lower than Whites on the reading assessment upon entry to kindergarten and by the end of first grade, the gap had grown to 4.2 points.

But how big of an achievement gap does this represent?

One way to answer this question is to compare the size of the achievement gap with how much the average student learns during kindergarten, which can tell us how far behind Latino students are compared to White students when they start kindergarten. We estimated that students increased their reading scores by about 1.7 points per month, which means that Latino students began kindergarten almost 2 months behind their White peers.

¹⁰ Although achievement differences exist among all major ethnic groups, we focused on comparisons with non-Latino White students because, historically, they have constituted the largest and most dominant racial/ethnic group in America.

Figure 1
 Estimated reading achievement for Latinos and Whites from kindergarten through first grade:
 Fall 1998 – Spring 2000



SOURCE: ECLS-K California sub-sample (N=1874) weighted (Y2COMW0).

Another way to measure the size of the achievement gap is to represent the difference in achievement test scores as a fraction of a standard deviation, which is known as an effect size (Cohen 1988).¹¹ One of the benefits of using effect sizes (ES) is that it facilitates comparisons between different variables of interest within the same study and between different studies through the use of a common metric. It also facilitates comparisons between achievement differences and interventions that could be used to overcome them.¹² The achievement gap in initial reading scores between Latinos and Whites represents an effect size of -.37, which can be

¹¹ Because the outcome variable in the HLM analysis has two standard deviations, one associated with students and one associated with schools, we estimated effect sizes using the standard deviation in achievement growth at the student level.

¹² It should be pointed out that the term *effect* does not imply a causal relationship between the predictor and the outcome.

considered small.¹³ However, by the end of first grade, the achievement gap increases to a moderate size of -.50. In math, Latinos begin kindergarten more than 2 months behind White students, which represents an achievement gap of -.48. By the end of first grade, the achievement gap in math grew to -.63.

What accounts for this achievement gap? To address this question, we first estimated a statistical model to identify how much of the variation in achievement was due to differences among students and how much was due to differences among the schools they attended. We found that between 72 and 88 percent of the variation was due to differences among students and 12 to 28 percent was due to differences among the schools they attended (see Rumberger and Arellano Anguiano 2004: Tables 4 and 5). In other words, as virtually all previous studies have shown, most of the variation in student achievement can be explained by differences in the attributes of students and their families, rather than by differences in attributes of their schools.¹⁴ Nonetheless, differences in schools still contribute to differences in student outcomes.

Next, we estimated a series of statistical models in order to identify which factors predicted achievement in reading and math and the extent to which the Latino-White achievement gap was reduced after controlling for those factors. We focused first on achievement differences upon entry to kindergarten and then on differences in achievement growth during kindergarten, first grade, and the summer in between.

¹³ Cohen (1988) suggests that effect sizes larger than .8 should be considered as large, those above .5 should be considered as moderate, and those above .2 as small (pp. 24-27).

¹⁴ Rowan, Correnti, and Miller (2002) argue that more refined statistical models show the majority of the variability in student learning can be attributed to teachers.

DIFFERENCES IN INITIAL ACHIEVEMENT

Our analysis revealed that differences in initial achievement in reading and math could be explained largely by two demographic factors: SES and language background. As shown in Table 1, Latino and White students vary widely with respect to these two factors. For example, mean SES for Latino students is about .94 points lower than for White students, which represents an effect size of -1.06 (or more than one standard deviation). And half of all Latino kindergarteners in our sample come from non-English backgrounds, compared to only 4 percent for White students.¹⁵ In order to determine the effects of language background on Latino achievement, we compared Latinos from English backgrounds with Latinos from non-English (Spanish) backgrounds.

Table 1
Differences in background characteristics of Latino and White kindergarten students

	Latino	White	Difference (Effect size)
Mean SES	-.44	.50	-1.13
Percent non-English background	.50	.04	.98

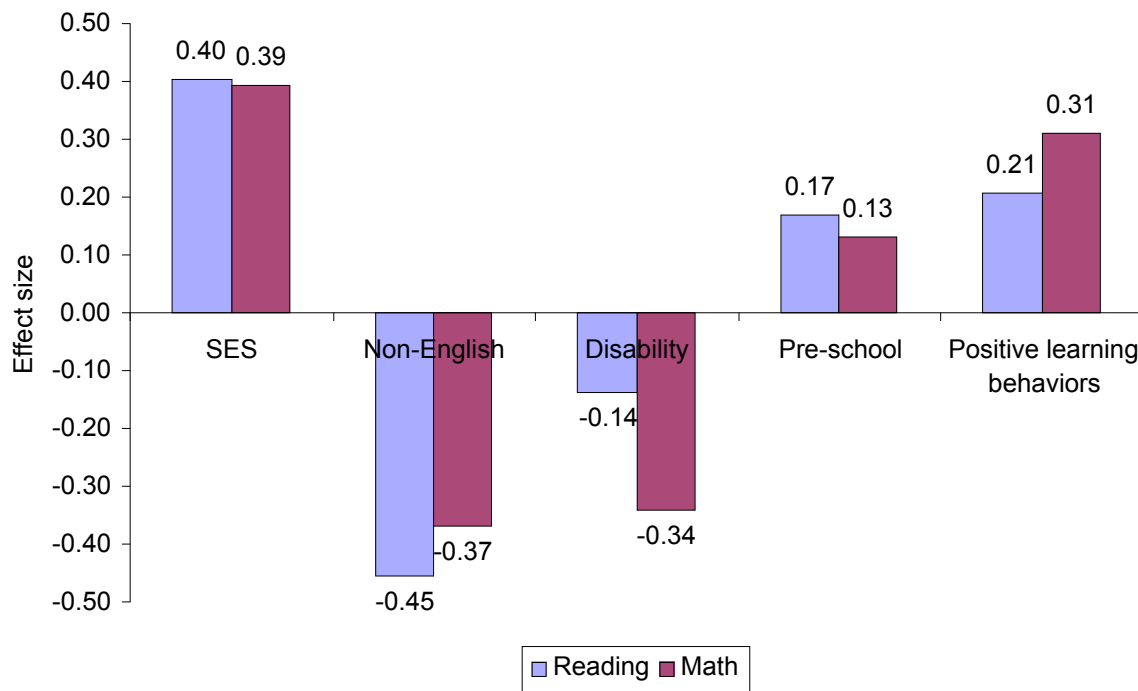
NOTE: Differences in values between Latino and White are all statistically significant at .1 level (ANOVA).

We found that both SES and language background have significant effects on initial achievement. The effect size of SES is .40 on initial reading achievement and .39 on initial math achievement (see Figure 2). The effect size of coming from a home where English is not the dominant language is -.45 on initial reading and -.39 on initial math. This means that non-English background Latino children begin kindergarten at a sizeable disadvantage compared to English background Latino children.

¹⁵ The percentage of students from non-English backgrounds in the sample used in the multilevel analysis is somewhat smaller than the percentage in the full ECLS California sub-sample of 1,874 students (50 vs. 56 percent) because non-English students who were not yet proficient in oral English by the end of first grade were not assessed in English reading and were excluded from our analysis.

After controlling for the effects of SES and home language, the Latino-White achievement gap in reading is reduced to $-.061$, or by more than 80 percent, and is no longer statistically significant (see Figure 3). This means that Latino and White students with the same SES and language backgrounds would essentially have the same reading levels upon entry to kindergarten. Controlling for the effects of SES and home language reduces the achievement gap in math from $-.48$ to $-.16$, or by two-thirds, rendering it marginally insignificant.

Figure 2
Effect sizes for selected predictors of initial reading and math



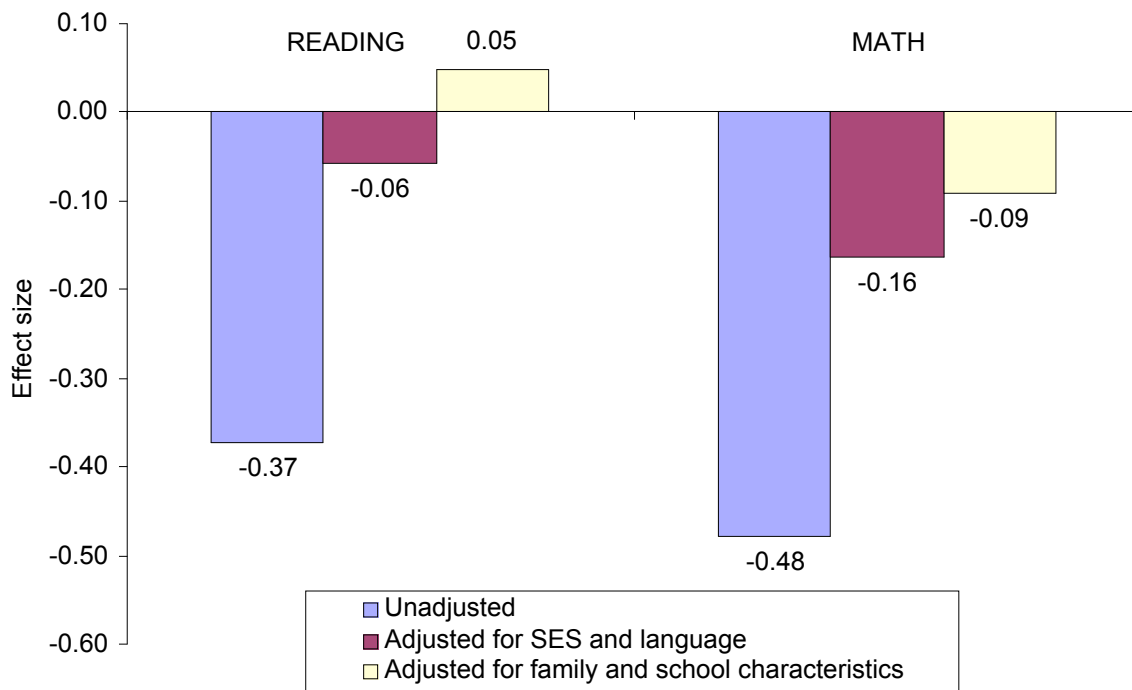
NOTE: Effect size represents the predicted change in reading or math performance, expressed in standard-deviation units, associated with a one unit (for dichotomous variables) or one standard deviation (for continuous variables) change in the predictor variable. The effects of SES and Non-English were estimated only controlling for those variables; the effects of the other variables were estimated controlling for a larger set of predictors (see Rumberger and Arellano Anguiano, 2004, Table A4).

Next we estimated the effects of a large number of additional predictors. We found a number of these factors had significant effects on initial reading and math achievement. Some of the more powerful factors are illustrated in Figure 2.¹⁶ Students with disabilities had lower initial

¹⁶ The complete list of predictors is shown in Rumberger & Arellano Anguiano (2004), Tables 3 and 4.

reading (ES = -.14) and math (ES = -.3) than students without disabilities; students who participated in preschool (excluding Head Start) had higher initial reading (ES = .17) and math (ES = .13) than students who did not participate in preschool. Finally, pro-learning behaviors (e.g., attentiveness, eagerness, independence, etc.) had positive effects on initial reading (ES = .21) and math (ES = .31). Controlling for all these factors completely eliminated the initial achievement gap between Latino and White students in reading and reduced the achievement gap in math by more than 80 percent (Figure 3)

Figure 3
The Latino-White achievement gap in initial reading and math achievement



NOTE: Effect size represents the predicted change in reading performance, expressed in standard-deviation units, associated with a one unit or one standard deviation change in the predictor variable.

DIFFERENCES IN STUDENT LEARNING

After examining differences in initial achievement, we then examined differences in student learning during kindergarten and first grade. We found that there were no significant differences in student learning between Latinos and non-Latino Whites during kindergarten, first grade, or the summer in between. In other words, although Latinos begin kindergarten with significantly lower achievement levels than non-Latino White students, their achievement increases at essentially the same rate during the first two years of school. Nonetheless, as we showed in Figure 1, by the end of first grade, the achievement gap has increased slightly. This suggests that schools neither increase nor decrease the achievement gap during the first two years of elementary school.

Our analysis did identify a number of factors that predict student learning during each of these periods. During kindergarten, we found: (1) pro-learning behaviors increased student learning in reading (ES = .19) and in math (ES = .12); (2) second time kindergartners learned less than other students in reading (ES = -.40) and in math (ES = -.47); and (3) students with disabilities learned less than non-disabled students in reading (ES = -.28), but not in math.

During the summer between kindergarten and first grade, we did not find any significant predictors of student learning.

During first grade, we found: (1) second-time kindergartners learned less than other students in reading (ES = -.26), but not in math; (2) students attending schools with a higher proportion of second time kindergartners learned less than other students in reading (ES = -.12), but not in math; (3) students attending schools with a higher proportion of minority students learned less in reading (ES = -.18), but not in math; (4) students attending large schools (750 students or more) learned less in reading (ES = -.23), but not in math; and (5) students in private

schools learned less than students in public schools in math ($ES = -.34$), but not in reading. This last finding is probably due to the fact that twice as many students attending public schools had teachers who taught math more than 60 minutes a day (40 percent versus 20 percent). The emphasis on math in public schools could be a direct result of California's accountability system that measures math and reading performance beginning in second grade.

SUMMARY AND POLICY IMPLICATIONS

This study examined the achievement gap between California Latino and White students in the first two years of elementary school. Because the data used in this study assessed students' performance in reading and math at the beginning and end of both kindergarten and first grade, it was possible to examine the extent of the achievement gap when students first began school, the achievement gap in learning during kindergarten and first grade, and the achievement gap in summer learning between kindergarten and first grade.

The analysis revealed that in California Latino students begin kindergarten at a significant disadvantage to non-Latino, White students: In the Fall of 1998 the achievement gap at the beginning of kindergarten, as measured by the difference in average test scores, was $-.37$ of a standard deviation in reading and $-.48$ of a standard deviation in math. The analysis also revealed that the achievement gap changes very little over the first two years of school. By the end of first grade, the achievement gap grew to $-.50$ of a standard deviation in reading and to $-.63$ of a standard deviation in math. These results suggest that schools do little to either widen or close the sizeable achievement gap that exists among students when they walk in the door.

Achievement data from other sources suggests that the achievement gap widens as students progress through school. For example, an analysis of data from the National

Assessment of Educational Progress for California students in the fourth grade shows an achievement gap of -.84 in 1998 reading scores and -.85 in 2000 math scores.¹⁷ Comparing those figures with the present findings suggests that about half of the achievement gap in fourth grade exists when students walk in the door at kindergarten. This means that efforts to close the gap must focus not just on schools, but also on opportunities outside of school, particularly before students begin school.

The analysis also revealed that most, but not all, of the achievement gap can be explained by two demographic characteristics of Latino students—socioeconomic status and language background. The study not only revealed the extent of the achievement gap, but also a number of factors that contribute to promote or impede the achievement of all students. Some of these factors reflect the practices of students and their families. Students who attended center-based preschool began kindergarten at a considerable advantage to students who attended Head Start or did not attend any preschool. Yet White students were twice as likely to participate in center-based preschool programs than Latino students. On the other hand, Latino students were more likely to participate in Head Start, the federally-funded preschool program for disadvantaged students. Although earlier studies have found a positive benefit to students from participating in Head Start, including Latinos (Currie and Duncan 1995; Currie and Thomas 1999), the present study found no overall benefit from participating in Head Start for any children. Students with positive learning behaviors (e.g., attentiveness, eagerness, independence, etc.) learned more in school. Both parents and schools can encourage these behaviors that enhance learning.

Other factors reflect the policies and practices of schools. Retention had a large negative impact on learning. Not only did retained students learn less than other students the year they were retained, they also learned less the year after. This suggests that retention, by itself, is not

¹⁷ Data retrieved February 1, 2003 from the NAEP website: <http://nces.ed.gov/nationsreportcard/naepdata/>.

an effective practice to overcome whatever difficulties students have that lead them to be retained in the first place.¹⁸ Instead, parents and schools should address those difficulties before students are retained (Grissom and Shepard 1989).

The social composition of schools also appears to effect learning. In particular, students experience slower reading development during first grade in schools with high concentrations of second-time kindergarteners and high concentrations of minority students. Since the socioeconomic composition of schools and a number of school resource measures were not related to learning, this suggests that students improve their reading by being exposed to higher achieving peers. Other research, including a recent study in San Diego, also demonstrates that student learning is affected by the achievement level of their classmates (Betts, Zau, and Rice 2003; Hanushek, Kain, Markman, and Rivkin 2003; Rivkin 2001; Ryan 2000). Because California students are highly segregated by race, social class, and language (Betts et al. 2000: Figure 3.1), all of which are related to student achievement, then segregation in California is probably contributing to the growth of the achievement gap.

The study also investigated whether a number of school structural features and resources impacted learning. For the most part, they did not. For instance, neither small schools nor private schools imparted any advantage on learning during the first two years of school (although students in elementary schools with more than 750 students had lower learning levels in reading). In fact, students who attended private schools actually learned less math in first grade than students attending public schools, probably because public schools spend more time teaching math. For the most part, class size also did not predict differences in learning, except in

¹⁸ A study of retention among Latinos and Whites in a southern California school district also found that kindergarten retention had an adverse effect on first grade achievement (Cosden, Zimmer, Reyes, and Gutierrez 1995). A recent review of the research literature found that retention also increases the likelihood of dropping out of high school (Jimerson, Anderson, and Whipple 2002).

the case of math learning during first grade. This analysis raises questions about whether California's expensive investment in reduced classes during the first four years of elementary school is a worthwhile investment (Hanushek 1999; Jepsen and Rivkin 2002; Stecher and Bohrnstedt 2002).

The achievement gap between Latino and White students in California is large, even in the first couple of years of schooling. In fact, it is sizeable as soon as students enter school. To close it will take concerted efforts not just in the educational arena, but also in the larger arena of social policy.

The prospects of closing the achievement gap through educational policies alone are limited. Although a number of educational programs have been shown to produce sizeable improvements in the educational outcomes of Latino students (Slavin and Calderón, 2001), statewide policies have shown much more modest effects. For example, what some observers consider to be a highly successful statewide school reform program—the Tennessee class size reduction experiment—produced a modest effect size of .25 over four years (Finn and Achilles 1999). California's class size reduction program has had an even smaller impact (Jepsen and Rivkin 2002; Stecher and Bohrnstedt 2002). Even if statewide reform efforts were more successful at improving student achievement, they would do little to close the achievement gap unless they somehow were able to target Latino students and high-concentration Latino schools.

The present study finds that most of the disparities in achievement between Latino and White students can be traced to factors outside of school. Because Latino students start school behind other students and learn less when school is not in session, policy interventions should focus on closing the gap during these times. For example, the present study and other research documents the effectiveness of preschool in improving early student achievement (Gorey 2001).

Because Latino families are less likely than White families to participate in center-based childcare, at least in part because of their lower income levels (Liang, Fuller, and Singer 2000), the provision of subsidized childcare would likely reduce disparities in school readiness. Programs to increase the English literacy skills of parents may also be promising. With the passage of Proposition 227, California adopted the Community-Based English Tutoring (CBET) program, which provides \$50 million to local education agencies to set up programs to provide adult English language instruction to parents and other community members who then are supposed to provide tutoring to English learners.¹⁹ Although no formal evaluation of the program's effectiveness has been conducted, anecdotal evidence suggests it is having a positive effect on parental involvement in their children's schooling (Merickel et al. 2003: IV43-44.). Finally, targeted summer programs could also reduce disparities in summer learning (Cooper, Charlton, Valentine, and Muhlenbruck 2000), although future studies will need to determine which programs are most effective.²⁰

Yet these efforts, even if they are successful, may not be enough to overcome disparities in family income, employment opportunities, housing, and access to health care that all contribute to the welfare of families and their children (Reyes 2001). Ultimately, eliminating disparities in educational opportunities and educational outcomes in California is such an immense challenge that it will require concerted efforts to overcome disparities in all areas of social policy.

¹⁹ For more information, see the California Department of Education website: <http://www.cde.ca.gov/sp/el/cb/>.

²⁰ Because only 30 percent of the ECLS participants were surveyed in the fall of first grade, we were unable to examine the impact of summer school and other activities on summer learning. However, another study using a smaller, national sample of the ECLS data found little impact of summer school on summer learning, although the study did find modest effects of home literacy activities (Lee and Burkam 2003).

References

- Alexander, Karl L., Doris R. Entwisle, and Susan L. Dauber. 1993. "First-grade classroom behavior: Its short- and long-term consequences for school performance." *Child Development* 64: 801-814.
- Armor, David. 2003. *Maximizing intelligence*. Somerset, NJ: Transaction publishers.
- Ashton, Patricia T. and Rodman B. Webb. 1986. *Making a difference: Teachers' sense of efficacy and student achievement*. New York: Longman.
- Barnett, W. S. 1995. "Long-term effects of early childhood programs on cognitive and school outcomes." *The Future of Children* 5: 25-50.
- Bennet, Kymberley K., Daniel J. Weigel, and Sally S. Martin. 2002. "Children's acquisition of early literacy skills: Examining family contributions." *Early Childhood Research Quarterly* 17: 295-317.
- Betts, Julian R., Kim S. Rueben, and Anne Danenberg. 2000. *Equal resources, equal outcomes? The distribution of school resources and student achievement in California*. San Francisco: Public Policy Institute of California.
- Betts, Julian R., Andrew C. Zau, and Lorient A. Rice. 2003. *Determinants of student achievement: New evidence from San Diego*. San Francisco: Public Policy Institute of California.
- Burchinal, Margaret R., Ellen Peisner-Feinberg, Robert Pianta, and Carollee Howes. 2002. "Development of academic skills from preschool through second grade: Family and classroom predictors of developmental trajectories." *Journal of School Psychology* 40: 415-436.
- California Department of Education. 2004. *Standardized Testing and Reporting (STAR) Results*. Retrieved July 26, 2004 (<http://star.cde.ca.gov/>).
- California Department of Finance. 2003. *California Public K-12 Enrollment Projections by Ethnicity: 2002 Series*. Retrieved January 15, 2003 (<http://www.dof.ca.gov/html/Demograp/K12ethhb.htm>).
- Cohen, Jacob. 1988. *Statistical power analysis for the behavioral sciences*. Hillsdale, N.J.: Erlbaum.
- Coleman, James S. 1990. *Equality and achievement in education*. San Francisco: Westview Press.
- Coleman, James S., Ernest Q. Campbell, Carol J. Hobson, James McPartland, Alexander M. Mood, Frederick D. Weinfeld, and Robert L. York. 1966. *Equality of educational opportunity*. Washington, D.C.: U.S. Government Printing Office.

- Cooper, Harris, Kelly Charlton, Jeff C. Valentine, and Laura Muhlenbruck. 2000. "Making the most of summer school: A meta-analytic and narrative review." *Monographs of the Society for Research in Child Development* 65: 1-118.
- Cosden, Merith, Jules Zimmer, Carla Reyes, and Maria d. R. Gutierrez. 1995. "Kindergarten practices and first-grade achievement for Latino Spanish-speaking, Latino English-speaking, and Anglo students." *Journal of School Psychology* 33: 123-141.
- Currie, Janet and Thomas Duncan. 1995. "Does Head Start make a difference?" *American Economic Review* 85: 341-364.
- Currie, Janet and Duncan Thomas. 1999. "Does Head Start help Hispanic children?" *Journal of Public Economics* 74: 235-262.
- Darling-Hammond, Linda, Barnett Berry, and Amy Thoreson. 2001. "Does teacher certification matter? Evaluating the evidence." *Educational Evaluation and Policy Analysis* 23: 57-77.
- Dornbusch, Sanford M., Phillip L. Ritter, Phillip H. Leiderman, Donald F. Roberts, and Michael J. Fraleigh. 1987. "The relation of parenting style to adolescent school performance." *Child Development* 58: 1244-1257.
- Entwisle, Doris R. and Karl L. Alexander. 1995. "A parent's economic shadow: Family structure versus family resources as influences on early school achievement." *Journal of Marriage and the Family* 57: 399-409.
- Entwisle, Doris R., Karl L. Alexander, and Linda S. Olson. 1997. *Children, schools, and inequality*. Boulder: Westview Press.
- Finn, Jeremy D. and Charles M. Achilles. 1999. "Tennessee's class size study: Findings, implications, misconceptions." *Educational Evaluation and Policy Analysis* 21: 97-110.
- Finn, Jeremy D., Gina M. Pannozzo, and Kristin E. Voelkl. 1995. "Disruptive and inattentive-withdrawn behavior and achievement among fourth graders." *The Elementary School Journal* 95: 421-434.
- Gallimore, Ronald and Claude Goldenberg. 2001. "Analyzing cultural models and settings to connect achievement and school improvement research." *Educational Psychologist* 36: 45-56.
- Gandara, Patricia, Russell W. Rumberger, Julie Maxwell-Jolly, and Rebecca Callahan. 2003. "English Learners in California schools: Unequal resources, unequal outcomes." *Educational Policy Analysis Archives* 11: Retrieved from <http://epaa.asu.edu/epaa/v11n36/>.
- Gorey, Kevin M. 2001. "Early childhood education: A meta-analytic affirmation of the short- and long-term benefits of educational opportunity ." *School Psychology Quarterly* 16: 9-30.

- Grisson, James B. and Lorrie A. Shepard. 1989. "Repeating and dropping out of school." Pp. 34-63 in *Flunking Grades: Research and Policies on Retention*, edited by L. A. Sheppard and M. L. Smith. New York: Falmer Press.
- Guo, Guang and Kathleen M. Harris. 2000. "The mechanisms mediating the effects of poverty on children's intellectual development." *Demography* 37: 431-447.
- Hanushek, Eric A. 1997. "Assessing the effects of school resources on student performance: An update." *Educational Evaluation and Policy Analysis* 19: 141-164.
- Hanushek, Eric A. 1999. "Some findings from an independent investigation of the Tennessee STAR experiment and from other investigations of class size effects." *Educational Evaluation and Policy Analysis* 21: 143-163.
- Hanushek, Eric A., John F. Kain, Jacob M. Markman, and Steven G. Rivkin. 2003. "Does peer ability affect student achievement?" *Journal of Applied Econometrics* 18: 527-544.
- Hedges, Larry V., Richard D. Laine, and Rob Greenwald. 1994. "Does money matter? A meta-analysis of studies of the effects of differential school inputs on student outcomes." *Educational Researcher* 23: 5-14.
- Jencks, Christopher and Meredith Phillips. 1998. *The Black-White test score gap*. Washington, D.C.: Brookings Institution.
- Jencks, Christopher., Marshall. Smith, Henry Acland, Mary J. Bane, David Cohen, Herbert Gintis, Barbara. Heyns, and Stephan M. Michelson. 1972. *Inequality: A reassessment of the effects of family and schooling in America*. New York: Basic Books.
- Jepsen, Christopher and Steven Rivkin. 2002. *Class size reduction, teacher quality, and academic achievement in California public elementary schools*. San Francisco: Public Policy Institute of California.
- Jimerson, Shane, Gabrielle E. Anderson, and Angela D. Whipple. 2002. "Winning the battle and losing the war: Examining the relation between grade retention and dropping out of high school." *Psychology in the Schools* 39: 441-457.
- Kao, Grace and Marta Tienda. 1995. "Optimism and achievement: The educational performance of immigrant youth." *Social Science Quarterly* 76: 1-19.
- Lee, Jaekyung. 2002. "Racial and ethnic achievement gap trends: Reversing the progress toward equity?" *Educational Researcher* 31: 3-12.
- Lee, Valerie E. and Anthony S. Bryk. 1989. "A multilevel model of the social distribution of high school achievement." *Sociology of Education* 62: 172-192.
- Lee, Valerie E. and David T. Burkam. 2003. "Dropping out of high school: The role of school organization and structure." *American Educational Research Journal* 40: 353-393.

- Lee, Valerie E., Robert F. Dedrick, and Julia B. Smith. 1991. "The effect of social organization of schools on teachers' efficacy and satisfaction." *Sociology of Education* 64: 190-208.
- Lee, Valerie E. and Julia B. Smith. 1999. "Social support and achievement for young adolescents in Chicago: The role of school academic press." *American Educational Research Journal* 36: 907-945.
- Lee, Valerie E., Julia B. Smith, and Robert G. Croninger. 1997. "How high school organization influences the equitable distribution of learning in mathematics and science." *Sociology of Education* 70: 128-150.
- Liang, Xiaoyan, Bruce Fuller, and Judith D. Singer. 2000. "Ethnic differences in child care selection: The influence of family structure, parental practices, and home language." *Early Child Research Quarterly* 15: 357-384.
- McNeal, Ralph B. 1999. "Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out." *Social Forces* 78: 117-144.
- Merickel, Amy, Robert Linqanti, Thomas B Parrish, Maria Pérez, Marian Eaton, and Phil Esra. 2003. Effects of the Implementation of Proposition 227 on the Education of English Learners, K – 12: Year 3 Report. Palo Alto, Ca.: American Institutes for Research. Retrieved July 28, 2004 (http://lmri.ucsb.edu/resdiss/2/pdf_files/finalreports/011604_yr3_final%20report.pdf).
- National Research Council and Institute of Medicine. 2000. *From neurons to neighborhoods: The science of early childhood development*. Washington, D.C.: National Academic Press.
- Newmann, Fred M., Robert A. Rutter, and Marshall S. Smith. 1989. "Organizational factors that affects school sense of efficacy, community, and expectations." *Sociology of Education* 62: 221-238.
- Ogbu, John U. 1992. "Understanding cultural diversity and learning." *Educational Researcher* 21: 5-14.
- Phillips, Meredith. 1997. "What makes schools effective? A comparison of the relationships of communitarian climate and academic climate to mathematics achievement and attendance during middle school." *American Educational Research Journal* 34: 633-662.
- Raudenbush, Stephen W. and Anthony S. Bryk. 2002. *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage Publications.
- Reardon, Sean F. 2003. *Sources of educational inequality: The growth of racial/ethnic and socioeconomic test score gaps in kindergarten and first grade*. University Park, PA: Population Research Institute, Pennsylvania State University.

- Reese, Leslie and Ronald Gallimore. 2000. "Immigrant Latinos' cultural model of literacy development: An evolving perspective on home-school discontinuities." *American Journal of Education* 108: 103-134.
- Reyes, Belinda I. 2001. *A portrait of race and ethnicity in California: An assessment of social and economic well-being*. San Francisco: Public Policy Institute of California.
- Rivkin, Steven G. 2001. "Tiebout sorting, aggregation and the estimation of peer group effects." *Economics of Education Review* 20: 201-209.
- Roscigno, Vincent J. 2000. "Family/school inequality and African-American/Hispanic achievement." *Social Problems* 47: 266-290.
- Rothstein, Richard. 2004. *Class and schools: Using social, economic, and educational reform to close the black-white achievement gap*. Washington, D.C.: Economic Policy Institute.
- Rowan, Brian, Richard Correnti, and Robert Miller. 2002. "What large-scale, survey research tells us about teacher effects on student achievement: Insights from the prospects study of elementary schools." *Teachers College Record* 104: 1525-1567.
- Rowan, Brian, Stephen W. Raudenbush, and Sang J. Kang. 1991. "Organizational design in high schools: A multilevel analysis." *American Journal of Education* 99: 238-266.
- Rumberger, Russell W. and Brenda Arellano Anguiano. 2004. Investigating the Latino Achievement Gap in California During Early Elementary School: Technical Appendix. Retrieved July 28, 2004 (<http://education.ucsb.edu/rumberger/>).
- Rumberger, Russell W. and Patricia Gándara, P. 2000. "The schooling of English learners." Pp.23-44 in *Crucial Issues in California Education*, edited by E. Burr, G. Hayward, and M. Kirst. Berkeley, CA: Policy Analysis for California Education.
- Rumberger, Russell W. and Katherine A. Larson. 1998. "Toward explaining differences in educational achievement among Mexican-American language minority students." *Sociology of Education* 71: 69-93.
- Rumberger, Russell W. and Gregory J. Palardy. in press. "Does segregation (still) matter? The impact of student composition on academic achievement in high school." *Teachers College Record*
- Ryan, Allison M. 2000. "Peer groups as a context for the socialization of adolescents' motivation, engagement, and achievement in school." *Educational Psychologist* 35: 101-111.
- Slavin, Robert.E. and Margarita Calderón, eds. 2001. *Effective programs for Latino students*. Mahwah, NJ: Laurence Erlbaum Associates.

- Snow, Catherine, Wendy S. Barnes, Jean Chandler, Irene F. Goodman, and Lowry Hemphill. 1991. *Unfulfilled Expectations: Home and School Influences on Literacy*. Cambridge, Mass.: Harvard University Press.
- Stecher, Brian M. and George W. Bohrnstedt. 2002. *Class size reduction in California: Findings from 1999–00 and 2000–01*. Sacramento, CA: California Department of Education.
- Steinberg, Laurence, Sanford M. Dornbusch, and Bradford. B. Brown. 1992. "Ethnic differences in adolescent achievement." *American Psychologist* 47: 723-729.
- Suarez-Orozco, Marcelo M. and Carola E. Suarez-Orozco. 1995. "The cultural patterning of achievement motivation: A comparison of Mexican, Mexican immigrant, Mexican American, and non-Latino White American students." Pp. 161-190 in *California's Immigrant Children: Theory, Research, and Implications for Educational Policy*, edited by R. G. Rumbaut and W. A. Cornelius. San Diego: Center for U.S.-Mexican Studies, University of California, San Diego.
- Sui-Chu, Esther H. and J. Douglas. Willms. 1996. "Effects of parental involvement on eighth-grade achievement." *Sociology of Education* 69: 126-141.
- Thernstrom, Stephan and Abigail Thernstrom. 2003. *No excuses: Closing the racial gap in learning*. New York: Simon and Schuster.
- U.S. Department of Education, National Center for Education Statistics. 2000. *ECLS-K Base Year Data Files and Electronic Codebook*. Washington, D.C.: National Center for Education Statistics.
- U.S. Department of Education, National Center for Education Statistics. 2003. *Digest of Education Statistics, 2002*. Washington, D.C.: U.S. Department of Education.