GENERATIONAL STATUS AND ACADEMIC ACHIEVEMENT AMONG LATINO HIGH SCHOOL STUDENTS: EVALUATING THE SEGMENTED ASSIMILATION THEORY

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ABSTRACT: *In this study, the author evaluates some of the key assertions of the segmented assimilation theory by examining the generational pattern of achievement among Latino high school students. Segmented assimilation theory posits that the outcomes of immigrants will not necessarily improve monotonically across generations, especially in disadvantaged contexts, and that maintaining familial and ethnic ties can have a protective effect on immigrant students. The author tests these ideas by examining variation in the generational pattern of achievement in low-income schools among Latino high school students. The author finds that changes in achievement across generations generally follow a pattern of classical assimilation with small, though not statistically significant, improvements in achievement from the first to the second generation and from the second to the third generation in both poor and nonpoor schools. Contrary to hypotheses derived from segmented assimilation theory, the author finds no evidence of "downward assimilation" across generations among Latinos attending low-income schools.*
Keywords: education; achievement; Latinos; segmented assimilation

The rapid growth and diversity of immigration to the United States since the 1960s has led to renewed scholarly interest in assimilation processes. In addition to focusing on the socioeconomic attainment of adults, scholars have also been interested in the educational progress of recent waves of immigrants and their children as a means of assessing their future socioeconomic prospects and of analyzing the complexities involved in the assimilation process (Landale, Oropesa, and Llanes 1998; Portes and Rumbaut 1996, 2001; Ramirez and de la Cruz 2003; Rumbaut 1995). Studying the school-related outcomes of immigrants and their children is important given the significance of educational achievement and attainment in determining individuals' life chances (Landale et al. 1998).

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Much of the research examining the educational outcomes of new immigrant groups has been motivated by the segmented assimilation theory (Portes and Rumbaut 1996, 2001; Portes and Zhou 1993). Classical models of assimilation contend that children from Latin American and Asian descent will gradually assimilate into the American mainstream like earlier generations of European immigrants (Alba and Nee 1997). Classical assimilation theories often associate the process of assimilation with upward mobility for immigrants and their children as each subsequent generation achieves higher social and economic status and becomes more similar to the American middle-class. Research on new immigrant groups, on the other hand, questions the association between assimilation and upward mobility (Portes and Zhou 1993). Segmented assimilation theory recognizes that due to the diversity of American society there are different paths available to which new immigrants may assimilate (Portes and Rumbaut 2001; Portes and Zhou 1993; Zhou 1999) that may include classical assimilation and upward mobility, downward assimilation and incorporation into the lower class, or economic advancement while maintaining a strong ethnic identity and embeddedness in an ethnic community (Portes and Zhou 1993).

In this study, I use nationally representative data from the Education Longitudinal Study (ELS) sophomore cohort to evaluate two key propositions of the segmented assimilation as they apply to the school performance of Latino high school students. Understanding patterns of achievement and attainment among Latinos is especially important for our understanding of stratification in American society given that they are the fastest growing ethnic group in American public schools (Cornelius 1995; National Center for Education Statistics [NCES] 1995, 2002). First, I examine whether there is evidence of "downward assimilation" across generations among Latinos residing in disadvantaged contexts. Classical and segmented assimilation theories both contend that the pathway of adaptation that an immigrant group undergoes depends on a range of individual and contextual factors. Among the important individual-level factors are human capital at the time of immigration, command of the English language, country of birth, and length of U.S. residency. Contextual factors include geographic area of residence, policies of receiving countries, and the attitudes and values of native-born citizens of host countries (Alba and Nee 1997; Portes and Zhou 1993; Zhou 1999). However, whereas classical models of assimilation view these factors as additive, segmented assimilation views them as interactive. For example, segmented assimilation contends that immigrant students residing in poor inner-cities and attending disadvantaged schools tend to adapt, over time, to the norms of their native-born peers. In such contexts longer residence in the country may be disadvantageous to some groups because greater exposure to native-born minority peers in inner-city environments may lead to lower educational aspirations and other unfavorable outcomes. If segmented assimilation theory is correct, therefore, we would expect that achievement may increase across generations in advantaged schools (evidence of classical assimilation) but may stagnate or even decline across generations in disadvantaged schools (evidence of downward assimilation).

Second, I examine whether downward assimilation in disadvantaged contexts is lessened by two factors: (1) maintaining a strong ethnic identity and connections

to the immigrant group and (2) the optimism of immigrant parents. Segmented assimilation scholars argue that the negative effect of residing in disadvantaged contexts can be mitigated when students maintain a strong ethnic identity and connections to their communities. The immigrant community may be able to reinforce the importance of educational achievement and parents may seek to maintain close bonds with their children to help them avoid many of the negative factors associated with living in disadvantaged neighborhoods (Zhou 1999). Studies have also suggested that students benefit from the optimism of immigrant parents, especially in disadvantaged contexts. This helps to explain the common finding of relatively high achievement among second-generation students. Second-generation students inherit the positive attitudes toward education of their immigrant parents yet are of higher socioeconomic standing and are more proficient in English than first-generation youth (Kao and Tienda 1995). These optimistic attitudes tend to decline by the third generation, however, as individuals experience discrimination and other structural barriers to upward mobility (Kao and Tienda 1995).

LITERATURE REVIEW

While classical assimilation theory posits that across generations, distributions of educational and economic attainment for immigrant groups converge with those of the native population (Alba and Nee 1997; Gordon 1964), the segmented assimilation perspective rejects the notion of a unilinear process of assimilation and seeks to explain varied educational and economic outcomes within and between immigrant groups. According to this theory, immigrant groups that receive a favorable reception or have high levels of human or social capital at the time of immigration may experience upward mobility in and integration to U.S. society. Other groups with fewer resources and lower levels of capital at the time of immigration may not experience such upward mobility but rather may assimilate into the "underclass" (Portes and Zhou 1993; Zhou 1999). Still other groups may experience rapid economic advancement within a cohesive immigrant community.

Several studies have investigated changes in achievement across generations of U.S. residency. While some research suggests that the educational outcomes of Latinos improve across generations (Bean and Tienda 1987; Hirschman 1996; Matute-Bianchi 1986; Warren 1996; Zsembik and Llanes 1996), others suggest that under certain circumstances some immigrant groups experience downward assimilation. The latter set of studies have found that although the second-generation children of immigrants have more favorable educational outcomes than the first generation, this progress stalls after the second generation with few improvements in academic achievement, educational attainment, and earnings between the second and third generation (Grogger and Trejo 2002; Kao and Tienda 1995; Landale et al. 1998; Portes and Rumbaut 2001; Wojtkiewicz and Donato 1995). According to segmented assimilation theory, this pattern of downward assimilation across generations should be most likely to occur in disadvantaged contexts, where optimistic attitudes tend to erode by the third generation due to experiences with discrimination and structural barriers to upward mobility.

Rather than expecting a uniform process of adaptation with greater exposure to American society, segmented assimilation theory predicts that adaptation depends on a variety of individual and contextual factors. Human capital at the time of immigration, command of the English language, country of birth, and length of U.S. residency are among some of the important individual-level factors influencing the outcomes of immigrants. The social context into which immigrants are incorporated also plays a critical role in determining which pattern of adaptation an immigrant group undergoes. According to Portes and Zhou (1993), there are three aspects of the social context that create vulnerability to downward assimilation. These include color, the absence of mobility ladders, and location. Color is important to the extent that nonwhite groups face prejudice and discrimination that inhibit their advancement. Location is important because the concentration of immigrants in economically disadvantaged neighborhoods places immigrants and their children in close contact with native-born minorities and in contexts where there are few opportunities for upward mobility. The transformation of the economy that has eliminated most routes to occupational mobility for unskilled workers leaves few viable job prospects for those lacking educational qualifications (Portes and Zhou 1993). These low chances of mobility create pessimism, particularly among disadvantaged inner-city youth whose job prospects have been hit especially hard by deindustrialization. In such contexts, immigrant children are exposed to "the adversarial subculture developed by marginalized native youths to cope with their own difficult situation" (Portes and Zhou 1993:83). Since public school attendance in the United States is based on place of residence, these economic and social influences experienced in neighborhoods are also felt in the public schools. Students in schools shape one another's attitudes and expectations. In disadvantaged urban environments, native-born minorities are often skeptical about the role of the education system as a vehicle for upward mobility and respond to this skepticism with opposition to mainstream institutions (Ogbu 1978; Portes and Zhou 1993). Because a sizeable portion of immigrants and their children reside in poor urban neighborhoods and attend underprivileged schools, the oppositional culture that is argued to characterize native-born youth from disadvantaged minority groups may also negatively affect the educational outcomes of immigrant children (Zhou 1999).

When residence in poor urban environments puts immigrants at risk of downward assimilation, segmented assimilation theory asserts that maintaining the culture of origin can have a protective effect for immigrant children. The immigrant community may be able to reinforce the importance of educational achievement and parents may seek to maintain close bonds with their children to help them avoid many of the negative factors associated with living in disadvantaged neighborhoods. These family and community networks can facilitate children's adaptation to school. Coleman (1988), for example, found that cohesive communities facilitate the role of parenting because adults reinforce each other's normative control of their children. The "closure" of such communities represents a form of social capital because it helps parents instill achievement values in their children (Coleman 1988). In disadvantaged contexts, maintaining a strong ethnic identity and connection to one's ethnic community is argued to provide social capital and

to buffer against many of the negative factors that accompany living in poor inner-city environments (Portes and Rumbaut 2001; Portes and Zhou 1993). Portes and Rumbaut (2001), for example, find that bilingual students have higher levels of academic achievement compared to their monolingual English-speaking co-ethnics and that students who maintain friendships within their ethnic circle do better academically. If youth assimilate too fully into the surrounding social environment, they may experience downward assimilation and lose access to the social and cultural resources of the ethnic community (Xie and Greenman 2005).

Prior research has also used the "immigrant optimism hypothesis" to explain why educational outcomes do not always increase across generations, especially in disadvantaged environments (Kao and Tienda 1995). This hypothesis maintains that immigrants' attitudes favoring upward mobility are passed along to their children but tend to erode by the third generation. Although immigrants usually have few economic resources initially, they generally expect that their children will experience upward mobility. Minorities that have lived in the United States for several generations, on the other hand, may become frustrated by their prospects for upward mobility because of experiences with discrimination. Native-born minority parents may then pass on these leveled aspirations to their children (Kao and Tienda 1995). Therefore, although the third generation may be advantaged in terms of socioeconomic status and command of the English language, the first and second generations benefit from the optimism of their immigrant parents in ways not experienced by the third generation. Consequently, educational outcomes do not continue to improve between the second and third generation despite increases in parental education and income and improved command of the English language.

Latinos are a good case for examining aspects of the segmented assimilation theory. Relatively low levels of parental human capital and a negative context of reception may put many Latino students (especially the Mexican majority) at risk of downward assimilation (Portes and Rumbaut 2001). Children of working-class immigrants who are concentrated in ethnically and economically segregated environments may face the most severe challenges to upward mobility, as residence in disadvantaged areas presents structural barriers to success and exposure to the "adversarial subcultures" that are argued to hamper the success of some native-born minority groups (Ogbu 1978; Portes and Rumbaut 2001; Portes and Zhou 1993). Many first- and second-generation Latino children of immigrants have parents with relatively low levels of education, limited English proficiency, and limited job prospects. Latino students also tend to be geographically concentrated in different regions of the country and are more likely than whites to live in central cities that are racially and economically segregated (Arias 1986; Portes and Truelove 1987; Stowell 2002; Therrien and Ramirez 2000). Portes and Rumbaut (2001) have argued that Mexican immigrants, in particular, are a group in which we would expect to see the negative effects of low human capital combined with a negative context of reception among immigrant parents to put youth at risk of downward assimilation. The rapidly growing size of the Mexican population in parts of the United States coupled with the relatively disadvantaged position of the first generation makes them a good case for evaluating the merits of segmented assimilation, particularly its claims about the risks of downward assimilation.

STUDY DESIGN

Overview

This study evaluates two central claims of the segmented assimilation theory that have not been evaluated in prior research. First, segmented assimilation theory suggests that downward assimilation is likely to occur among Latinos residing in areas with high concentrations of poverty. If this is true, we might expect to see the hypothetical relationships between generational status and achievement presented in Figure 1. Increases in achievement should occur between each subsequent generation in relatively more advantaged contexts (evidence of classical assimilation) while achievement may stagnate or decline across generations in low-income contexts (evidence of downward assimilation). I test these propositions by examining the generational pattern of achievement of a nationally representative sample of high school sophomores in 2002.

Data

My analyses are based on the ELS of 2002 conducted by the NCES. The ELS is based on a nationally representative sample of high school students who were in the tenth grade during the spring term of the 2001–02 school year. Respondents were selected using a two-stage sample selection process, selecting first a sample of schools and then students within these schools. In the first stage, the sampling procedure set the probabilities of selection proportional to the estimated

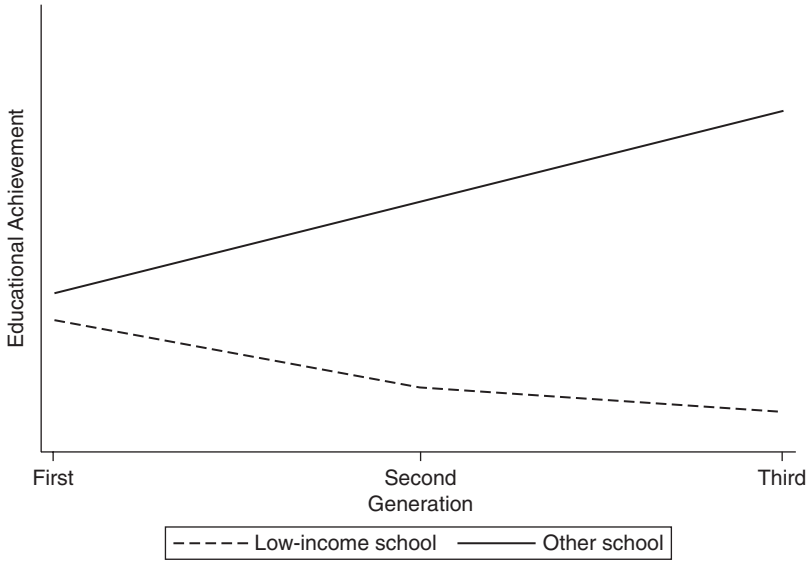


FIGURE 1

Hypothetical Relationship between Generation and Educational Achievement or Attainment.

enrollment of tenth grade students. This resulted in 1,221 eligible public, Catholic, and other private schools from a population of approximately 27,000 schools enrolling tenth grade students in 2002. Of the eligible schools, 752 participated in the study, resulting in a 67.8 percent (weighted) response rate. In the second stage of sample selection, approximately twenty-six students per participating school were selected from lists of their tenth grade enrollment. About 87 percent of eligible selected students participated by completing the student questionnaire. The full sample includes information from 15,362 high school sophomores. My analysis will be based on information from the 10,991 non-Latino white and Latino[1] (of any race) students in the sample. Surveys were also collected from students' parents, school administrators, and mathematics or language arts/English teachers.

One challenge to evaluating the segmented assimilation theory using nationally representative data on educational achievement is that until recently small proportions of students from immigrant groups appeared in national samples. Because the segmented assimilation theory is concerned with within-ethnic-group differences, nationally representative data often lack sufficient numbers of immigrant students to allow rigorous quantitative analyses. However, as the most recent nationally representative longitudinal study of American high school students, ELS includes an oversampling of more than 2,000 Latinos.[2]

Variables

The dependent variables used in this analysis are students' math and reading test scores, measured when they were in the tenth grade (see Table 1 for descriptive statistics). Achievement test scores are an important outcome to study given their associations with other educational outcomes such as high school graduation and college attendance. Academic achievement has been shown to be a key mediator in the status attainment process and thus should be of central theoretical concern in studies of immigrant assimilation. The math tests measured student proficiency in arithmetic, algebra, geometry, data/probability, and advanced topics. Reading tests consisted of reading passages of one paragraph to one page in length, followed by three to six questions based on each passage. The reading passages included literary material as well as topics in the natural and social sciences. The test scores are standardized with a mean of 0 and a standard deviation of 1.

Generational status is defined as follows: First-generation students are those who were born outside of the United States.[3] Second-generation students are those who were born in the United States and have at least one foreign-born parent. Native-born Latino students with native-born parents are classified as third generation and higher. Non-Latino whites (from any generation) are the omitted group in the regression analyses.[4] This measure is based on the assumption that longer time spent in the United States both by the individual and by their parents leads to more potential for assimilation. I assume that the second generation is necessarily more assimilated than the first generation and that the third generation is necessarily more assimilated than the second generation. Of the 2,059 Latino students in my sample, 30 percent are first generation, 35 percent are second generation, and 27 percent are third generation or higher.

TABLE 1

Descriptive Statistics: Education Longitudinal Study 2002

	White		*First-Generation Latino*		*Second-Generation Latino*		*Third-Generation Latino*	
	Other Schools	*Poor Schools*	*Other Schools*	*Poor Schools*	*Other Schools*	*Poor Schools*	*Other Schools*	*Poor Schools*
Dependent Variables								
Standardized math score	0.26	–0.08	–0.68	–0.86	–0.35	–0.62	–0.30	–0.53
Standardized reading score	0.27	–0.07	–0.69	–0.86	–0.29	–0.67	–0.22	–0.42
Cultural Connectedness								
Native Spanish speaker: Use Spanish rarely	0.00	0.00	0.39	0.38	0.34	0.39	0.08	0.04
Native Spanish speaker: Use Spanish usually	0.00	0.00	0.37	0.43	0.14	0.26	0.03	0.03
Latino: Native English speaker	0.00	0.00	0.23	0.18	0.51	0.34	0.88	0.93
Three best friends are Latino	0.00	0.00	0.54	0.74	0.34	0.67	0.21	0.39
Social Capital/Parent Aspirations								
Parent knows kids' friends	0.92	0.91	0.90	0.89	0.90	0.90	0.92	0.91
Parent knows kids' friends' parents	0.66	0.63	0.66	0.56	0.58	0.59	0.59	0.55
Parent wants kid to get bachelor's or higher	0.87	0.79	0.89	0.86	0.89	0.87	0.88	0.77
Strongly agree that parents expect success	0.48	0.45	0.58	0.58	0.62	0.70	0.54	0.58
Success in school								
Student Background Controls								
Family income, in 1,000s	75.01	51.86	37.06	33.53	51.85	32.36	59.50	42.06
Parent education: < high school	0.02	0.04	0.22	0.38	0.18	0.35	0.04	0.11
Parent education: high school/GED	0.19	0.28	0.24	0.18	0.25	0.23	0.21	0.29
Parent education: Some college	0.34	0.38	0.29	0.28	0.29	0.28	0.47	0.43
Parent education college	0.25	0.18	0.16	0.11	0.17	0.10	0.20	0.11
Parent education: Advanced degree	0.20	0.12	0.10	0.05	0.11	0.04	0.09	0.06
Single-parent household	0.19	0.21	0.25	0.28	0.21	0.24	0.20	0.34
Female	0.50	0.50	0.53	0.56	0.46	0.49	0.50	0.50
General track	0.38	0.42	0.41	0.45	0.41	0.42	0.45	0.48
Vocational track	0.08	0.13	0.10	0.16	0.09	0.15	0.08	0.12
College track	0.54	0.45	0.49	0.39	0.49	0.43	0.47	0.40

School Controls									
Percentage Hispanic in school	0.08	0.18	0.33	0.59	0.37	0.63	0.27	0.52	
Percentage black in school	0.07	0.13	0.11	0.12	0.10	0.11	0.07	0.11	
Northeast region	0.23	0.10	0.17	0.15	0.19	0.16	0.13	0.06	
Western region	0.16	0.24	0.37	0.46	0.41	0.54	0.45	0.47	
Midwestern region	0.31	0.21	0.16	0.12	0.18	0.07	0.18	0.07	
South	0.30	0.44	0.31	0.26	0.22	0.24	0.24	0.40	
Rural	0.25	0.27	0.13	0.05	0.10	0.03	0.18	0.07	
Urban	0.20	0.22	0.38	0.62	0.28	0.61	0.37	0.45	
Suburban	0.55	0.51	0.49	0.32	0.62	0.36	0.45	0.48	
Catholic school	0.06	0.00	0.04	0.00	0.07	0.00	0.09	0.00	
Other private school	0.05	0.00	0.01	0.01	0.02	0.01	0.02	0.00	
Public school	0.88	0.99	0.95	0.99	0.91	0.99	0.88	1.00	
n	7,329	1,603	294	381	371	406	324	283	

I use the proportion of students receiving free or reduced priced lunches at each school to proxy for the economic conditions of the areas in which students live and attend school. Since public school attendance is largely based on neighborhood of residence, this measure should be a good proxy of the economic conditions surrounding students. Students qualify for reduced price lunches if their family income is 185 percent or below the federal poverty line and they qualify for free lunch if their income is 130 percent or below the federal poverty line (depending on family size) (U.S. Department of Agriculture, Food and Nutrition Service 2001). Schools are considered high poverty if they are in the top quartile in terms of the proportion of students who receive free or reduced priced lunches. Fifty-six percent of first-generation, 52 percent of second-generation, and 47 percent of third-generation Latinos attend high-poverty schools compared to 18 percent of non-Latino whites. This measure is obtained from a school administrator questionnaire.

I also use several other measures that describe the areas in which students reside, including the percentage black and Latino at the student's high school, region (west, south, midwest, and northeast), and urbanicity (urban, suburban, and rural). Latino students in my sample tend to be concentrated in the western region and are more likely to attend schools in urban areas than are non-Latino whites. Roughly 45 percent of Latinos reside in urban areas or in the western region compared to about 20 percent of whites. The first generation is especially likely to attend an urban school. Latinos in my sample also attend schools with high concentrations of Latino students. Whereas white students attend high schools that are about 10 percent Latino, first- and second-generation Latinos attend high schools that are about 50 percent Latino and third-generation Latinos attend high schools that are 40 percent Latino. The ethnic segregation of Latinos is even more acute in low-income schools.

The measures of cultural connectedness I include in my models are the frequency in which native Spanish speakers use Spanish with their friends and ethnic friendship segregation. Latinos who are native Spanish speakers are classified either as using Spanish with their friends *rarely* or as using Spanish with their friends *usually*. Latinos who are native English speakers constitute a third group, and non-Latino whites are the omitted group on this measure. This measure is limited in some respects because students were first asked if their native language is English and then those who were not native English speakers were asked about the frequency in which they used their native language. Thus, the data do not identify whether native English-speaking Latinos are proficient in Spanish or how often they speak Spanish with their friends. This measure is therefore not truly a measure of bilingualism. However, the measure still serves as a proxy for maintaining a strong ethnic identity and connection to one's ethnic community among those who are not native English speakers. Fifty percent of Latinos are native English speakers. Of the 50 percent of Latinos who are native Spanish speakers, 28 percent rarely use Spanish with their friends and 22 percent usually use Spanish with their friends. To adjust for the possibility that native Spanish speakers who more frequently use Spanish with their friends may also be less proficient in English than

other students, I include a dummy variable that indicates the students' report of whether they speak English very well.

Friendship segregation among Latino students is measured by whether Latino respondents' three best friends are also Latino. Students were asked to list the names of their three best friends at school. In subsequent questions they were also asked to indicate the race and ethnicity of these three friends. This variable is a dummy variable, with a value of 1 indicating that the student is Latino and his or her three best friends are also Latino and a value of 0 indicating otherwise. If students only listed one or two friends, they have a value of 1 on this measure if they are Latino and all the friends they listed are also Latino. It is possible that both Spanish language use and having co-ethnic friends are not simply individual-level variables but are also dependent upon the ethnic composition of the schools the students attend. Therefore, I also include a measure of the school percentage Latino in my models to account for this possibility. This measure was obtained from a school administrator questionnaire.

I include several measures intended to capture the concepts of social capital and parental expectations. The social capital measures gauge connections between parents' and students' social networks. The measures I use are whether the student's parent knows his or her friends and the parents of his or her friends. Parents were asked to indicate whether they knew their child's three best friends at school and whether they knew the mother and father of these three best friends. This information is used to construct two dummy variables. One of these variables reflects whether parents know all three of their child's three best friends. The second variable reflects whether the parent knows at least one of the parents of each of his or her child's three best friends. The parental expectations measures I use include whether the respondents' parents indicate that they want their child to earn a bachelor's degree or higher and whether the students strongly agree that their parents expect them to be successful in school. As shown in Table 1, there is little variation in the social capital measures across groups, but second-generation Latinos are more likely than other students to strongly agree that their parents expect them to be successful in school. This is especially true among second-generation Latinos attending low-income schools. The vast majority of students' parents indicate that they hope their child attains a bachelor's degree or higher, although these proportions are smaller among third-generation Latinos and non-Latino whites attending low-income schools.

I include measures of socioeconomic status and additional school characteristics as control variables in my models. I measure socioeconomic status using family income, parental education, and whether the student comes from a single-parent household. The family income variable was taken from the parent questionnaire. Since family income was originally categorical, I recoded this measure to each category's midpoints for the sake of brevity. Less than $1,000 was coded as $500, and $200,001 or more was coded as $225,000. Parental education is measured using the higher of the respondent's parents' educational levels. This variable is obtained from the parent questionnaire when available, or from the student questionnaire if missing on the parent questionnaire.

I use multiple imputation to augment incomplete data. I assume that data are missing at random conditional on the covariates discussed above as well as some others. I estimate all of the models across five imputed data sets and combine estimates following procedures proposed by Royston (2004).[5]

Methods

My analyses are based on a series of Ordinary Least Squares (OLS) regression models for both math and reading achievement that are weighted to be nationally representative of the population of students in tenth grade in 2002.[6] First, I examine whether there is evidence of downward assimilation among Latinos attending low-income schools by estimating the following model:

$$Test_i = \alpha + \beta(GenStatus_i) + \gamma(PoorSchool_i) + \eta(GenStatus_i * PoorSchool_i) + \lambda(X_i) + \varepsilon_i, \quad (1)$$

where $Test_i$ is the math or reading test score for student i; $Gen\ Status_i$ is a vector of indicator variables that identify first-, second-, and third-generation Latinos (with non-Latino whites as the reference group); $Poor\ School_i$ is an indicator variable identifying schools in the top quartile of the proportion of students receiving free or reduced priced lunches; $Gen\ Status_i * Poor\ School_i$ are interaction terms between generational status and attending a high-poverty school; X_i is a vector of student and school-level controls; and ε_i is an error term. If the segmented assimilation is correct, we should expect to see some significant interaction terms—that is, a different achievement trajectory for immigrants attending school in more disadvantaged areas.

Second, I examine whether downward assimilation is lessened when immigrant children retain connections to their parents and communities. I do so by adding the measures of cultural connectedness, social capital, and parental expectations to the model estimated above. If adding these measures to the model changes the magnitude of the interaction terms, this would be consistent with the hypothesis that cultural connectedness and social capital help to mitigate downward assimilation.

RESULTS

Descriptive Results

In Table 1 I present means of the variables used in the analyses by generational status and school type. Not surprisingly, within each generation, students attending schools with fewer poor students have higher levels of reading and math achievement than their counterparts who attend low-income schools. Achievement also appears to increase from the first to the second generation and from the second to the third generation in both disadvantaged and nondisadvantaged schools. However, *t* tests indicate that differences between the second and third generation are not statistically significant except in the case of reading achievement in disadvantaged schools. In low-income schools the reading achievement of first-generation Latinos is .86 standard deviations below the grand mean, the

reading achievement of second-generation Latinos is .67 standard deviations below the grand mean, and the reading achievement of third-generation Latinos is .42 standard deviations below the grand mean. The second generation has higher levels of reading and math achievement than the first generation in both disadvantaged and nondisadvantaged schools, but achievement is only significantly higher between the second and third generation for reading achievement in disadvantaged schools.

OLS Regression Results

Looking at the results from the first models in Table 2 (math) and Table 3 (reading), we also observe that there are not statistically significant increases in achievement across generations even prior to adjusting for an extensive set of covariates. For both reading and math achievement, the results from the first model suggest that while achievement does increase from the first to the second generation, increases in achievement from the second to the third generation are smaller and not statistically significant.[7] For example, first-generation Latinos score between .69 and .93 standard deviations below whites on the math assessment, second-generation Latinos score between .66 and .44 standard deviations lower, and third-generation Latinos score between .59 and .37 standard deviations lower. Similar results are found for reading achievement. These results are from models that exclude interaction terms and can therefore be interpreted as the test score gaps averaged across low-income and non-low-income schools. There are also notable differences in both reading and math scores between students attending schools with large concentrations of poor students and students attending schools with more advantaged students. Students attending schools with many poor students score between .26 and .45 standard deviations lower on the math and reading assessments than students attending other schools.

Next, I evaluate whether the generational pattern of achievement is different in schools with high concentrations of poor students compared to other schools. In Model 2 I add interactions between generational status and attending a high-poverty school. The main effects are interpreted as the achievement gap between Latinos and whites attending non-low-income schools, whereas the interaction effects indicate the extent to which these relationships are weaker or stronger among students attending low-income schools. There is some evidence from Model 2 that the math and reading achievement gaps between first-generation Latinos and whites and between third-generation Latinos and whites may be *smaller* among students attending low-income schools, but these interactions are only significant at the .10 level. For reading achievement, the main effect in Model 2 suggests that first-generation Latinos attending nondisadvantaged schools score roughly .92 standard deviations lower than whites. In low-income schools, first-generation Latinos are only expected to score about .71 standard deviations lower (–.92 + .205 = –.715). Similarly, while third-generation Latinos are expected to score about .48 standard deviations lower than whites in nondisadvantaged schools, on average they only score about .28 standard deviations lower in low-income schools (–.482 + .203 = –.279). The magnitude of the achievement gaps between second-generation

TABLE 2

OLS Regression of Math Test Scores: Education Longitudinal Study 2002

	1	*2*	*3*	*4*
White (omitted)				
First-generation Latino	–0.808**	–0.924**	–0.215	–0.107
	(0.060)	(0.083)	(0.464)	(0.314)
Second-generation Latino	–0.549**	–0.601**	–0.003	0.065
	(0.055)	(0.077)	(0.473)	(0.320)
Third-generation Latino	–0.482**	–0.548**	–0.013	0.049
	(0.056)	(0.069)	(0.468)	(0.318)
Attends High Poverty School	–0.351**	–0.390**	–0.267**	–0.113**
	(0.047)	(0.056)	(0.039)	(0.038)
First Generation ×		0.215†	0.174	0.153
High-Poverty School		(0.127)	(0.107)	(0.114)
Second Generation ×		0.122	0.122	0.093
High-Poverty School		(0.107)	(0.098)	(0.089)
Third Generation ×		0.155	0.156†	0.111
High-Poverty School		(0.108)	(0.090)	(0.090)
Cultural Connections				
White (omitted)				
Native Spanish speaker:			–0.554	–0.348
Use Spanish rarely			(0.482)	(0.322)
Native Spanish speaker:			–0.708	–0.441
Use Spanish usually			(0.443)	(0.283)
Latino: Native English speaker			–0.487	–0.429
			(0.467)	(0.310)
Latino: Three best friends are Latino			–0.249**	–0.120*
			(0.058)	(0.058)
Social Capital				
Parent knows kids' best friends			0.001	–0.019
			(0.045)	(0.043)
Parent knows kids' best			0.072**	0.038
friends' parents			(0.027)	(0.026)
Parental Expectations				
Parent wants kid to get			0.780**	0.569**
bachelor's or higher			(0.028)	(0.027)
Parents expect success in school			0.045*	0.011
			(0.021)	(0.020)
Socioeconomic/Demographic Controls				
Family income, in 1,000s				0.002**
				(0.000)
Parent education: High				
school/GED (omitted)				
Parent education: < high school				–0.115*
				(0.047)
Parent education: Some college				0.120**
				(0.025)

TABLE 2 (continued)

	1	*2*	*3*	*4*
Parent education college				0.236**
				(0.032)
Parent education: Advanced degree				0.414**
				(0.038)
Single-parent household				–0.075**
				(0.025)
Female				–0.148**
				(0.019)
Speaks English very well				0.312**
				(0.059)
School Controls				
Academic track (omitted)				
General track				–0.346**
				(0.023)
Vocational track				–0.355**
				(0.035)
Public high school				0.034
				(0.036)
Suburban (omitted)				
Urban				0.017
				(0.034)
Rural				–0.034
				(0.031)
South (omitted)				
Western region				–0.049
				(0.040)
Northeast region				0.044
				(0.036)
Midwestern region				0.018
				(0.032)
Percentage Hispanic at school				–0.115
				(0.078)
Percentage black at school				–0.357**
				(0.106)
Constant	0.240**	0.248**	–0.486**	–0.661**
	(0.022)	(0.021)	(0.047)	(0.091)
Observations	10,991	10,991	10,991	10,991
R-squared	0.11	0.11	0.21	0.31

Note: OLS = Ordinary Least Squares. Standard errors in parentheses. Models are weighted to be nationally representative of the population of students in tenth grade in 2002. Standard errors in models are adjusted for the clustering of students within schools using Huber-White robust standard errors, which adjust for correlations of error terms across observations. Test scores are standardized to have a mean of 0 and a standard deviation of 1.
$^{\dagger}p < 10\%$; $^{*}p < .05\%$; $^{**}p < .01$.

TABLE 3

OLS Regression of Reading Test Scores: Education Longitudinal Study 2002

	1	*2*	*3*	*4*
White (omitted)				
First-generation Latino	–0.810**	–0.924**	–0.224	–0.103
	(0.058)	(0.080)	(0.506)	(0.338)
Second-generation Latino	–0.544**	–0.536**	0.040	0.129
	(0.055)	(0.075)	(0.499)	(0.327)
Third-generation Latino	–0.390**	–0.482**	0.030	0.093
	(0.060)	(0.075)	(0.492)	(0.322)
Attends High Poverty School	–0.362**	–0.393**	–0.274**	–0.122**
	(0.047)	(0.053)	(0.040)	(0.040)
First Generation ×		0.205†	0.166†	0.147
High-Poverty School		(0.109)	(0.100)	(0.102)
Second Generation ×		0.004	0.009	–0.035
High-Poverty School		(0.102)	(0.099)	(0.091)
Third Generation ×		0.203†	0.200*	0.158
High-Poverty School		(0.118)	(0.101)	(0.101)
Cultural Connections				
White (omitted)				
Native Spanish speaker:			–0.526	–0.304
Use Spanish rarely			(0.504)	(0.330)
Native Spanish speaker:			–0.737	–0.462
Use Spanish usually			(0.462)	(0.298)
Latino: Native English speaker			–0.468	–0.419
			(0.491)	(0.315)
Latino: Three best friends are Latino			–0.236**	–0.091
			(0.061)	(0.057)
Social Capital				
Parent knows kids' best friends			–0.002	–0.042
			(0.046)	(0.045)
Parent knows kids' best			0.048†	0.017
friends' parents			(0.025)	(0.024)
Parental Expectations				
Parent wants kid to get			0.736**	0.497**
bachelor's or higher			(0.028)	(0.028)
Parents expect success in school			0.061**	0.022
			(0.021)	(0.021)
Socioeconomic/Demographic Controls				
Family income, in 1,000s				0.002**
				(0.000)
Parent education: high				
school/GED (omitted)				
Parent education: < high school				–0.055
				(0.047)
Parent education: Some college				0.147**
				(0.025)

TABLE 3 (continued)

	1	*2*	*3*	*4*
Parent education college				0.289**
				(0.032)
Parent education: Advanced degree				0.421**
				(0.038)
Single-parent household				–0.074**
				(0.026)
Female				0.096**
				(0.020)
Speaks English very well				0.463**
				(0.061)
School Controls				
Academic track (omitted)				
General track				–0.308**
				(0.023)
Vocational track				–0.396**
				(0.035)
Public high school				–0.051
				(0.038)
Suburban (omitted)				
Urban				0.061†
				(0.035)
Rural				–0.016
				(0.033)
South (omitted)				
Western region				–0.036
				(0.042)
Northeast region				0.071*
				(0.035)
Midwestern region				0.021
				(0.035)
Percentage Hispanic in school				–0.163*
				(0.079)
Percentage black in school				–0.274*
				(0.111)
Constant	0.249**	0.255**	–0.429**	–0.783**
	(0.022)	(0.022)	(0.049)	(0.093)
Observations	10,991	10,991	10,991	10,991
R-squared	0.10	0.10	0.20	0.28

Note: OLS = Ordinary Least Squares. Standard errors in parentheses. Models are weighted to be nationally representative of the population of students in tenth grade in 2002. Standard errors are adjusted for the clustering of students within schools using Huber-White robust standard errors, which adjust for correlations of error terms across observations. Test scores are standardized to have a mean of 0 and a standard deviation of 1.

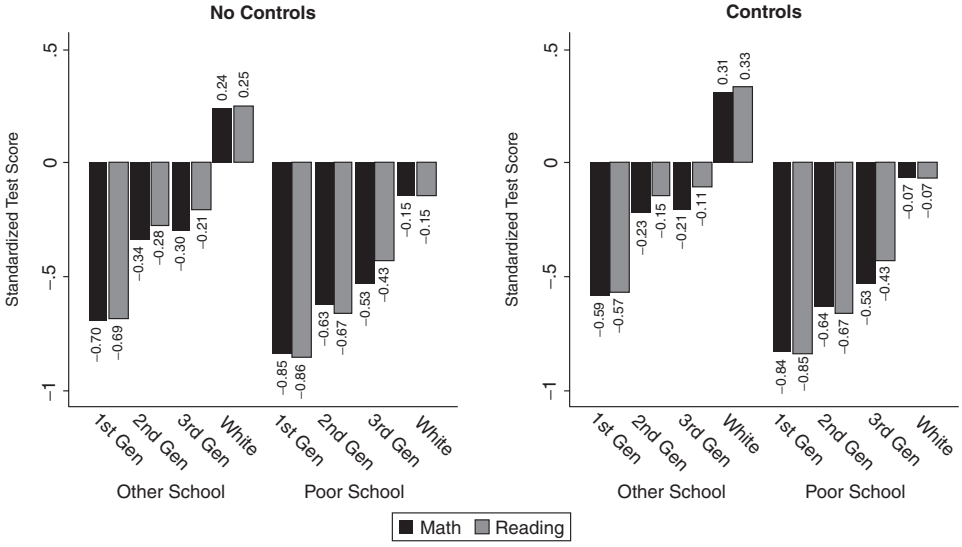
†$p < 10\%$; *$p < .05\%$; **$p < .01$.

Latinos and whites are similar in both low-income and non-low-income schools as these interaction terms fail to attain statistical significance in Model 2. Even though only a few of the interaction terms are marginally significant, that they are all positive and of similar magnitude across generations is evidence contrary to the notion that downward assimilation will prevail among Latinos attending low-income schools.

In Model 3 I add measures of cultural connections, social capital, and parental expectations. Latinos with ethnically segregated friendship networks have significantly lower levels of math and reading achievement compared to other students. There are no significant differences in achievement among Latinos who are native Spanish speakers compared to those who are native English speakers (although all groups score lower than whites and the standard errors are quite large). High parental expectations for their child's success in school are positively associated with both reading and math achievement, as is the variable indicating that parents know the parents of their child's friends. After including these measures in the model, the main effects for generation decrease substantially, indicating that differences in social capital, parental expectations, friendship segregation, and language use and proficiency explain much of the achievement gap between whites and Latinos (of all generations) attending nondisadvantaged schools. Upon adding these measures to the model, the interaction terms remain largely unchanged for second- and third-generation Latinos but decrease slightly in magnitude for first-generation Latinos.

The main effects and interaction terms generally decline a bit further in magnitude upon entering the full set of control variables in Model 4, but the patterns previously discussed remain largely the same. Overall, there is no evidence of "downward assimilation" (i.e., declines in achievement across generations) in low-income schools, nor is there evidence that cultural connections and parental expectations are serving to buffer against downward assimilation. Second-generation Latinos attending low-income schools were found to report higher parental expectations for their success in school than their third-generation counterparts (i.e., in Table 1), but these higher expectations do not explain why there are not larger statistically significant increases in achievement between the second and third generation in disadvantaged contexts. Although there are only small and nonsignificant increases in achievement from the second to the third generation, this pattern holds in both low-income and non-low-income schools, suggesting that achievement trajectories across generations do not depend on the economic level of the school students attend.

To further illustrate the findings discussed thus far, I present predicted test scores for whites and first-, second-, and third-generation Latinos in Figure 2. These predicted scores are shown both before and after control variables are introduced to the model, although both sets of results are similar. The predicted values in the graphs without controls were obtained after estimating Model 2, while the predicted values in the graphs with controls were obtained after estimating Model 4. These figures suggest a pattern that is largely consistent with classical assimilation in both types of schools. Predicted reading and predicted math achievement appear to increase from the first to the second generation and from the second



Models with controls include family socioeconomic status, gender, parental aspirations, cultural connections, English language proficiency, and attributes of high schools. Disadvantaged schools are those in the top quartile of the percentage of students receiving free or reduced price lunches. Test scores are standardized with a mean of 0 and a standard deviation of 1.

FIGURE 2

Predicted Math and Reading Scores by Latino Generational Status and School Poverty Level.

to third generation in both advantaged and disadvantaged schools, although the differences between the second and third generation are quite small and not statistically significant. The increase in achievement between the second and third generation appears to be even larger in disadvantaged schools than in advantaged schools, undermining the claim that downward assimilation will prevail among students attending disadvantaged schools.

DISCUSSION

By investigating the association between generational status and academic achievement and whether these associations vary among students attending schools with high concentrations of poor students, my analyses have allowed me to evaluate some of the key assertions of segmented assimilation theory. Prior research has not examined variation in the generational pattern of achievement in different school contexts or the extent to which cultural connections, social capital, and parental expectations can have a protective effect for immigrants residing in disadvantaged areas. Segmented assimilation theory posits that achievement will not necessarily increase across generations of U.S. residency, especially in low-income contexts, and that maintaining one's culture of origin and connections to one's parents and

community can have protective effects on the educational outcomes of immigrant children.

In both low-income and non-low-income schools, the findings suggest a pattern of classical assimilation with increases in achievement across generations, although the increase in achievement between the second and third generation in advantaged schools is quite small and perhaps of not great substantive importance. Whether this evidence should be interpreted as supporting or refuting segmented assimilation is not entirely clear. There is certainly no evidence of significant declines in achievement from the first to second generation or from the second to third generation in high-poverty schools, but the increases in achievement between these groups are fairly modest in size and not large enough to be statistically significant. We can therefore not rule out that achievement is relatively stagnant across generations and at best it seems to only increase by a small amount. That this pattern prevails in both advantaged and nondisadvantaged schools is somewhat inconsistent with segmented assimilation theory. Since segmented assimilation theory posits that immigrant students will assimilate into their surrounding communities, we would expect that students attending school in more middle-class areas would experience continued increases in their achievement across subsequent generations, but this is not the case even prior to controlling for the relatively advantaged socioeconomic status of the later generations. It is also not the case that achievement declines across generations in low-income schools despite the claim of segmented assimilation that greater exposure to other minority groups suppresses their achievement and makes them prone to the adoption of adversarial subcultures that reject success via the educational system.

I also find that the measures of cultural connections, social capital, and parental expectations mediate a substantial portion of the achievement gap between Latinos and whites. The measures of cultural connections I use are negatively associated with achievement. These inconsistencies with prior work are likely due to the differences in the measures I use. Portes and Rumbaut (2001), for example, find that bilingual students have higher levels of academic achievement compared to their monolingual English-speaking co-ethnics and that students who maintain friendships within their ethnic circle do better academically. Unfortunately, I do not have a true measure of bilingualism and can only examine the use of Spanish among those who are not native English speakers. Conditional on student reports of their English language proficiency and other factors, there are no significant differences in achievement among native English-speaking and native Spanish-speaking Latinos. The measure of friendship segregation is also limited in some respects because I do not know the generational status of Latino students' Latino friends. It is possible that students who spend time with all U.S.-born Latinos will have different trajectories than those who spend time with all foreign-born Latinos.

Conditional on other factors, students who report that their parents have high expectations and aspirations for their education also have higher levels of math and reading achievement. The association between parent aspirations and student achievement is similar in advantaged and disadvantaged environments,[8] but first- and second-generation students attending poor schools are more likely to agree

that their parents expect them to do well in school than are their third-generation counterparts. Second-generation Latinos are most likely to agree that their parents expect them to be successful in school, which is consistent with prior research that finds that students with immigrant parents benefit from their parents' relatively optimistic expectations for their children's futures (Kao and Tienda 1995). Among the first and second generations, the proportion of students agreeing that their parents expect success in school is similar in both advantaged and disadvantaged environments, while third-generation students attending poor schools are less likely to agree. That there is not a significant interaction between parent aspirations and school poverty level and achievement is reassuring, suggesting that high parental expectations for their children help kids in low-income schools as much as they help kids in relatively more advantaged schools.

Although the segmented assimilation theory has been quite influential in studies of immigrant adaptation, there are several critiques of the theory that may help to explain why some of the hypotheses I test here were not supported. While proponents of segmented assimilation contend that exposure to native-born minorities has a detrimental effect on immigrant children, other researchers disagree. Segmented assimilation theory tends to characterize inner-city black culture as "underclass." However, since more than one cultural model can be found among urban African Americans, assimilation into a native minority culture does not necessarily result in downward assimilation (Alba and Nee 2003; Neckerman, Carter, and Lee 1999; Xie and Greenman 2005). Neckerman et al. (1999) also note that immigrants may assimilate into a middle-class minority culture, a possibility that segmented assimilation does not acknowledge. They argue, for example, that middle-class African Americans have a "culture of mobility" that immigrants may adopt to help navigate challenges to economic mobility, such as discrimination. In this case, adopting the culture of native-born minorities can be beneficial rather than detrimental.

Other critics point out that maintaining strong ties to one's ethnic community has several potential drawbacks that go unacknowledged by segmented assimilation theorists (DeWind and Kasinitz 1997). For example, a lack of ties outside the ethnic community may restrict the flow of important job- or school-related information to an immigrant group. Being embedded in an ethnic group may also lead to a burden of excessive obligations to one's family and community and create time constraints that impede success in school (DeWind and Kasinitz 1997). These critiques are part of a growing body of literature that calls into question some of the theoretical ideas posited by segmented assimilation theory. The prediction of a second-generation decline has been met with especially harsh criticism as detractors believe such a forecast is overly pessimistic and unsupported empirically, especially as applied to school-related outcomes (Perlmann and Waldinger 1997; Waldinger and Feliciano 2004).

It is important to note that the analyses presented in this study are all cross-sectional and simply look at achievement at one point in time. It is possible that student growth in achievement during the high school years varies by generational status and the socioeconomic attributes of the areas in which students reside. Assimilation is a longitudinal process and Latinos of different generations

may be falling further behind, catching up, or even pulling ahead of whites as they progress through high school. Recent work, however, suggests that generational status has minimal influence on math and reading achievement growth over the last two years of high school (Glick and White 2003). Growth in achievement may be difficult to capture in only two years of high school given studies that show relatively little cognitive growth between the sophomore and senior years (Alexander and Pallas 1985; LoGerfo, Nichols, and Reardon 2006). Prior evidence also suggests that although Latinos begin school with lower levels of achievement than whites and that their learning rate is slower during elementary school, during the later years of school this difference in learning rates wanes. During high school, Latinos tend to be behind whites in terms of their achievement but do keep pace with white students' learning rate (LoGerfo et al. 2006). Given that there is little achievement growth over the last two years of high school and that achievement gaps remain relatively stable over this period, evaluating generational differences in achievement among high school students by analyzing achievement at one cross-section is appropriate. To the extent that achievement in the sophomore year is shaped by the assimilation experience of students, as both segmented and classical assimilation would anticipate, measuring growth in achievement likely removes most of the variation these theories seek to explain.

The associations between generation and achievement that I have documented are largely inconsistent with some key assertions of the segmented assimilation perspective—namely that achievement trajectories across generations will vary by school context such that immigrants residing in disadvantaged neighborhoods and attending high-poverty schools will exhibit downward assimilation or declines in achievement across generations. Although the study is limited in that it is only confined to Latinos and does not consider within-group differences among Latinos by country of origin (i.e., Mexican, Puerto Rican, Cuban, etc.), it is a useful addition to the limited body of work that seeks to empirically evaluate some of the complex theoretical ideas posed by segmented assimilation theory. Given that empirical tests of the interactive effects of individual and contextual factors on the educational outcomes of immigrants are relatively rare in the current literature, future research examining other educational or occupational outcomes with different data and different populations is warranted.

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NOTES

1. Students were asked, "Are you Hispanic or Latino/Latina?" To be consistent, I use the term *Latino*, although my findings really apply to students who identify as Hispanic or Latino, given the wording of the survey question.
2. Latinos as a group are quite heterogeneous and come from a variety of countries of origin. However, there are insufficient numbers of students within specific subgroups to further disaggregate the analyses. Of the more than 2,000 Latinos in my sample, nearly

70 percent are Mexican, 12 percent are Puerto Rican, 6 percent are Central American, 6 percent are South American, 3 percent are Cuban, and 4 percent are Dominican. In separate models (not shown) the Latino group was broken down into Mexican versus other Latino. The results are identical for both groups. It is also possible that the outcomes of Latinos vary by race (i.e., white, black, other), but since about half of Latino students declined to state a race, I cannot examine such racial differences.

3. It is likely that there is variation in the outcomes of the first generation based on years of U.S. residency. Unfortunately, there are insufficient numbers of first-generation Latino students in the data to give me enough power to estimate models with a more nuanced coding of generational status. Of the 2,059 Latinos in my sample, only 160 have been in the United States for five years or less.
4. Ninety-two percent of non-Latino whites in my sample are third generation or higher, and the results are the same if first- and second-generation whites are excluded.
5. Means and standard deviations of all variables are similar in the incomplete and the imputed data.
6. Given the sample design, students are nested within schools, making it necessary to adjust for the correlations of error terms across observations. I do so by using Huber-White (robust) standard errors, which account for the intraclass correlation by inflating the standard errors. I also conducted the analyses using multilevel models, which provide a more explicit way of accounting for the nested nature of the data. The results are similar across both specifications, so I only present results from OLS models with robust standard errors in the article.
7. I use *t* tests for the equality of coefficients to test whether group differences in coefficients are statistically significant.
8. This finding comes from models not shown that include interactions between being in a high-poverty school and parental aspirations.

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