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School Context and the Effect ESL Placement on Mexican-Origin Adolescents' Achievement[*]

Rebecca Callahan,
University of Georgia

Lindsey Wilkinson, and
University of Texas, Austin

Chandra Muller
University of Texas, Austin

Abstract

Objectives—Immigrant adolescents' academic achievement is crucial to our future economic stability, and Mexican-origin linguistic minority youth in U.S. schools generally demonstrate lower levels of achievement. English as a Second Language (ESL) programs provide an institutional response to these students' needs, the effect of which may vary by the proportion of immigrant students in the school.

Measures—Using propensity score matching and data from the Adolescent Health and Academic Achievement Study (AHAA) and the National Longitudinal Study of Adolescent Health (Add Health), we estimate the effect of ESL placement on Mexican-origin achievement for first-, second-, and third-generation adolescents separately in schools with many and few immigrant students.

Results—The estimated effect of ESL placement varies by both immigrant concentration in the school and by students' generational status.

Conclusions—We find that ESL enrollment may be protective for second-generation Mexican-origin adolescents in high immigrant concentration schools, and may prove detrimental for first-generation adolescents in contexts with few other immigrant students.

Academic achievement is a focus of research on adolescent immigrant assimilation due in large part to the central role that education plays in immigrants' well-being over the life course and in their potential to contribute to society (Duran and Weffer, 1992; Kao and Tienda, 1995). Schools have long been considered a key institution for socializing, instructing, and preparing immigrant children to participate in the larger society (Tyack, 1974). Immigrant linguistic minority students have unique academic and linguistic needs and federal regulations mandate that schools provide instruction appropriate to meet these needs under the *Lau* decision (*Lau*

v. Nichols, 1974). The degree to which schools develop and implement programs designed for nonnative-English speakers often reflects the concentration of immigrants at a given school site (Cosentino de Cohen, Deterding, and Clewell, 2005). School context, as it represents student demographics, undoubtedly affects the availability of ESL services and the identification of students for such services.

In this article, we consider the case of Mexican-origin students, both immigrant and native born, and the role of schools in shaping their achievement (Gibson, Gandara, and Koyama, 2004). As a major immigrant ethnic group in the United States, Mexican-origin families also live in communities with varying immigrant concentrations. Although it is widely recognized that school context impacts achievement in the general population, the prospect that it also shapes immigrant students' achievement has been largely overlooked (Portes and Hao, 2004). Schools with many immigrant students may offer services and a climate better suited to the particular academic and social needs of immigrants than schools with relatively few immigrant students. Alternately, if a higher concentration of immigrants in a community leads to lower-quality schools, fewer academic opportunities, or, possibly, social marginalization, then immigrant students' needs may be better served in schools serving predominantly nonimmigrant populations.

Using nationally representative data, we consider this possibility and hypothesize that Mexican-origin students in schools serving greater concentrations of immigrants may have very different experiences than those who attend school with few immigrants, and that these differences may influence their achievement. We focus on college preparatory achievement outcomes, namely, grade point average (GPA) and math and science course-taking, as college is increasingly essential for access to a middle-class economic position in U.S. society.

Distinguishing between schools with high and low concentrations of immigrant students and families, we investigate two different dimensions of the immigrant school experience. First, we consider whether students' placement in English as a Second Language (ESL) coursework, which is designed to develop English-language skills, influences their academic achievement. We hypothesize that ESL placement may offer a different experience depending on the number and the proportion of immigrants within the student body. Second, we examine whether students' generational status is associated with academic success. A large body of evidence suggests that other factors, mainly social, come into play among later-generation immigrants that could lead to academic declines. It is possible that these social factors play out differently depending on the concentration of immigrant students in the school. This study has important implications for policy and practice. Due to changes in the economy, numerous communities and schools across the nation that traditionally have had few if any immigrant students now enroll substantially more. Fifteen states experienced more than a 200 percent increase in students requiring ESL services between 1992 and 2002, during which time Add Health/AHAA respondents attended U.S. high schools (NCELA, 2006). The presence of immigrant students outside the traditionally immigrant receiving urban centers presents new challenges to schools.

Achievement and Mexican-Origin Youth

Among Mexican-origin students, English proficiency can be a source of academic and social division, marking generational status, assimilation, and acculturation (Rumbaut and Portes, 2001; Schmid, 2001). Schools play a role in this division via student identification for and placement in ESL programs as mandated by federal and state guidelines (*Lau v. Nichols*, 1974). Educators develop ESL programs in response to the presence of immigrant linguistic minority students; in schools serving greater concentrations of immigrants, ESL classes are likely to be more readily available with more specially trained teachers than in schools enrolling fewer immigrants (Cosentino de Cohen, Deterding, and Clewell, 2005). Placement in ESL

programs may either reinforce or blur intergenerational divisions among Mexican-origin youth; recent immigrants report feeling excluded not only by native English-speaking, dominant culture peers, but also by their native-born co-ethnics (Olsen, 1997; Valenzuela, 1999). This study explores the effect of ESL placement on Mexican-origin student achievement via both school context and generational status.

School Context: The Composition of the School as a Receiving Community

Given the tenuous academic and economic futures predicted for Mexican-origin youth, both immigrant and native born, the effect of school context merits serious consideration. A major tenet of segmented assimilation theory posits that the socioeconomic composition of the receiving community affects the economic integration of adult immigrants into the workforce (Gans, 1992; Oropesa and Landale, 1997). Strong immigrant communities can be found in suburbs and urban centers alike (Logan, Zhang, and Alba, 2002), suggesting that composition, rather than location or economic status, determines the strength of co-ethnic resources in a given community. For adolescents, schools *are* the receiving community, and their demographic composition suggests the presence and availability of co-ethnic resources.

The racial and ethnic composition of a school affects achievement (Bidwell and Kasarda, 1975; Rumberger and Willms, 1992), suggesting that the concentration of immigrants may also have an effect. Immigrant students experience two very distinct school and neighborhood contexts (Cosentino de Cohen, Deterding, and Clewell, 2005). Many live and attend school in communities with relatively few other immigrants; for ease of discussion, we refer to these communities and schools as *low-concentration* contexts. However, even more reside in *high-concentration* contexts, communities with much higher concentrations of immigrants and linguistic minorities (Logan, Zhang, and Alba, 2002).

Often, in highly competitive majority white environments, Mexican-origin students fare poorly, their differences are visible, and they experience high levels of social and academic marginalization (Portes and Hao, 2004). In these low-concentration contexts, Mexican-origin students are more likely to be peripheral to the academic and social processes of the majority culture and to find themselves resegregated—academically isolated from high-performing majority group peers (Valencia, 2002). As the concentration of linguistic minority and foreign born in the school and the community grows, schools and local governments evolve to respond to their needs (Lucas, Henze, and Donato, 1990). Social, academic, and linguistic norms change when a traditionally marginalized group grows significantly (Linton, 2004). Faced with growing immigrant linguistic minority populations, instructional programs and course offerings expand to meet students' linguistic and academic needs (Walqui, 2000).

The role of school context as it affects immigrant achievement remains relatively unexplored (Portes and Hao, 2004). The majority of educational research dealing directly with the effect of school composition on Mexican-origin youth achievement has been largely qualitative and ethnographic, tied to specific communities and locales (Valenzuela, 1999; Vigil, 1997). Analyses utilizing a nationally representative sample of students in their schools will clarify the effect of school context and composition.

ESL Placement: Educational Policy and School Context

Through scheduling, students in schools are exposed to academic courses, which affects achievement (Carbonaro and Gamoran, 2002), educational trajectories, and future professional opportunities (Riehl, Pallas, and Natriello, 1999). Access to academic content becomes even more pronounced when schools must address the tension inherent in meeting both the academic and linguistic needs of Mexican-origin youth, many of whom speak English as a second language. Mexican-origin students have been found to complete less math and science

coursework than their Anglo or Asian peers (Valencia, 2002). Traditionally, math and science coursework has been viewed as less language dependent. Math is often the first course into which ESL students are mainstreamed, followed by science (Olsen, 1997). In theory, placement in ESL services should not affect math or science enrollment; however, course taking has been found to vary by ESL and immigrant status (Wang and Goldschmidt, 1999), as well as race and ethnicity (Hallinan, 1994). ESL coursework is neither meant to replace, nor preclude access to, rigorous academic coursework; if it does, then it may seriously disrupt long-term academic trajectories. Mexican-origin students' access to academic content via course placement merits careful consideration.

Lau (1974) mandates identification of students and the provision of an equitable, accessible education, most often in the form of ESL services; however, the quality and quantity of services and instruction vary greatly across states, districts, and schools (Rivera et al., 1997). In response to the proportion of immigrant students at a school site, administrators may choose different strategies for meeting students' linguistic and academic needs. In schools with many immigrant students (Lucas et al., 1990), later-generation Mexican-origin students may benefit from the academic optimism modeled by their first-generation peers. In these schools, the networks that develop via ESL placement may buffer oppositional behavior and provide co-ethnic, linguistic, and social support (Brittain, 2002). These networks may promote positive identity development and biculturalism, along with other factors that contribute to school success (Rumberger and Larson, 1998). In schools with few immigrant students, administrators and educators must negotiate the diversion of resources to provide linguistic support to a small group of students identified for ESL services. If schools are ill equipped with the human and material resources to provide more than basic language instruction courses to ESL-identified students, ESL classrooms risk becoming depositories for all at-risk students, regardless of their linguistic or academic needs (Cosentino de Cohen, Deterding, and Clewell, 2005). Mexican-origin youth, already at risk academically, may experience a negative net estimated effect of ESL placement on their achievement.

Generational Status and Achievement: Mexican-Origin Youth

Patterns of assimilation and integration vary by race/ethnicity and by generation (Rumbaut and Portes, 2001). The children and grandchildren of western European immigrants from the early 20th century (Roediger, 2005) and the descendents of Asian and Southeast Asian immigrants from the mid 20th century demonstrate high levels of academic and economic attainment (Alba and Nee, 2003). The most striking exception to this pattern of generational advancement is the case of Mexican-origin immigrants (Grogger and Trejo, 2002); due to a variety of factors, academic and economic achievement appears to plateau, if not decline, between the second and third generations (Gans, 1992). As a measure of assimilation and integration, academic achievement can be viewed as a source of social division among Mexican-origin students.

In U.S. schools, first-generation Mexican-origin students tend to demonstrate "immigrant optimism" and relatively high levels of academic achievement compared to their second- and third-generation peers (Kao and Tienda, 1995). Mexican-origin youth who assimilate into a peer culture that devalues academic success and produces an "oppositional culture" or "adversarial stance" toward the dominant society have been found to struggle academically and access relatively few social and cultural resources from their community of origin (Ogbu, 1991; Suárez-Orozco and Suárez-Orozco, 1995).

Caught between the optimism of the first generation and the potential alienation of the third, second-generation Mexican-origin youth may feel more angst about their position and identity due to competing allegiances to two cultures (Portes and Rumbaut, 2001). Among Mexican-origin youth discontent with their marginalized role in U.S. schools, academic success may be perceived as co-opting with and conforming to the dominant culture (Vigil, 1997). Second-

generation Mexican-origin youth may be especially susceptible to the pull, either positive or negative, of peer culture, a culture to which they are exposed in the context of the school. We hypothesize that school context may affect the achievement patterns of Mexican-origin youth.

Schools create—and Mexican-origin youth experience—a tension when placement in ESL coursework diminishes access to the social and academic resources necessary for school success (Callahan, 2005). However, ESL placement may also provide a protective factor, access to co-ethnic information, social, and academic networks (Olsen, 1997; Brittain, 2002). The stagnation of achievement in the third generation highlights the importance of these networks and the consequences of marginalization in subtractive, even hostile, contexts (Stanton-Salazar, 2001). In this study, we analyze the effect of ESL placement on Mexican-origin youths' achievement in different school contexts while accounting for English proficiency, among other factors. We hypothesize that schools' demographic composition may influence the effect of ESL placement on the achievement of Mexican-origin youth, an effect that may also vary by the individual student's generational status. We use propensity score matching techniques to first estimate students' likelihood for placement in ESL. Then, among students with similar propensities for placement, we compare the achievement of those actually placed into ESL with the achievement of their mainstreamed counterparts.

Data and Methods

Data

This study uses data from the Adolescent Health and Academic Achievement Study (AHAA) and the National Longitudinal Study of Adolescent Health (Muller et al., 2007) to investigate the influence of high school ESL placement on Mexican-origin youths' end of high school academic outcomes. Using a two-stage stratified sampling design, more than 80 high schools were selected for the Add Health study according to their region, urbanicity, sector, racial composition, and size. An in-school survey was administered to all students attending school in these high schools during the 1994–1995 academic year. The survey sample was augmented using school records to draw a representative sample of boys and girls (in equal numbers) in Grades 7–12 to participate in the Add Health longitudinal study that currently includes three waves of data. Three waves of in-home survey data were collected in 1995, 1996, and 2000–2001; the Wave III sample includes 15,163 young adults.

In 2002–2003, when almost all Add Health respondents were no longer attending high school, high school transcripts were collected from the high schools last attended by Wave III respondents. Transcripts were collected and coded for 12,250 Wave III respondents, over 81 percent of the Wave III Add Health sample; 985 of the students for whom AHAA collected a high school transcript report being Mexican-origin in the Wave I survey, 625 of these attend a high school that offered ESL. Each course that appeared on the transcript was coded with a standard coding scheme, the Classification System for Secondary Courses (CSSC), using information provided by the schools about course offerings. Grades were coded in a standard format and the courses were assigned Carnegie Units for comparability across schools. The coding schemes were comparable to those used in the National Assessment of Educational Progress High School Transcript Studies (NAEPHSTS) and are similar to those used in NELS and HS&B.[1]

Sample

Of the original 78 Add Health high schools in AHAA, we identified 64 that enrolled Mexican-origin students, 23 of which offered ESL classes. Our analytic sample is comprised of Mexican-

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[1]NELS: National Educational Longitudinal Study (1988); HS&B: High School and Beyond Study (1982).

origin students ($N = 625$) enrolled at one of the 23 Add Health schools that offered ESL coursework and enrolled Mexican-origin students. We limited our sample in order to best understand the effect of ESL placement on Mexican-origin student achievement. To be included, Mexican-origin students must have completed the Add Health Wave I and Wave III surveys, have had their high school transcripts collected, have a valid transcript weight, and have no missing values on the dependent variables or on generational status.

For this study, we split our sample of Mexican-origin students based on the demographic composition of the school they attended. Schools were divided into two groups based on the concentration, high or low, of the immigrant linguistic minority population, determined by the proportion of students who were either first- or second-generation immigrants. This population includes not only Mexican-origin students, but also students of other ethnicities, as schools process immigrant and linguistic minority students similarly, with relatively little attention paid to national origin (Olsen, 1997). The Add Health schools fell into two categories: those with a majority concentration of immigrant students (55 percent or more: two standard deviations above of the mean for all Add Health high schools) and those with a lower concentration of immigrant students (less than 55 percent).

Table 1 shows the characteristics of schools with high and low concentrations of immigrant students, as well as the 41 Add Health schools that enroll Mexican-origin students that appear to offer no ESL coursework. The mean immigrant population in high-concentration schools is 0.83 and 0.39 in low-concentration schools. In addition, high-concentration schools also enroll the largest proportions of Latino and Mexican-origin students, students whose parents do not have a high school diploma, and students who live in neighborhoods with higher concentrations of foreign-born and linguistically isolated residents.

In our sample, 456 Mexican-origin students attended the five high-concentration ESL schools, and 169 attended the 18 low-concentration ESL schools. As achievement among Mexican-origin students varies by generational status, we designed this study to investigate the effect of ESL placement on achievement among Mexican-origin youth when accounting for both English proficiency and generational status (Rumbaut and Portes, 2001). Table 2 shows Mexican-origin student characteristics by generational status and concentration of immigrant students in the school. The majority of first-, second-, and third-generation students are enrolled in high immigrant concentration contexts. Although virtually all the first generation and two-thirds of the second generation report *usually* speaking a language other than English in the home, regardless of school context, this is not the case for the third generation. Among third-generation-plus Mexican-origin adolescents, nearly a third report *usually* speaking a language other than English in the home in high immigrant concentration school contexts; however, this number drops to barely 3 percent in low immigrant concentration schools. It is important to keep in mind that by adolescence a high proportion of linguistic minority adolescents report a preference for English, despite the presence of a language other than English in the home (Portes and Rumbaut, 2001).

Variables

Academic Outcomes—Our academic outcomes of interest include junior year GPA and math and science enrollment.[2] We constructed each of these variables using data from respondents' high school transcripts. GPA is a continuous variable ranging from a low of 0 to a high of 4.0. Due to the relatively high rate of high school dropout reported among linguistic minorities (Klein et al., 2004), we predict junior rather than senior year GPA. Another

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[2]Math and science coursework variables were modeled separately, as well as combined. The separate results are consistent with the combined; as colleges will not accept one without the other, the combination was preferable, if not necessary in light of our argument.

important measure of academic achievement is enrollment in college preparatory coursework, as we suspect that enrollment in college prerequisites provides a proxy for the academic press of students' high school curricula. Specifically, completion of algebra II is a strong predictor of college attendance (Adelman, 1999), as is chemistry. In addition, math and science are often perceived to be less language dependent than social science or English-language arts, and are thus believed to less likely be affected by ESL placement. For this reason, we include a measure of math and science enrollment focused on algebra II and chemistry. This variable ranges from 0 to 4. A score of 0 indicates that the student took nothing above general science or algebra, the minimum to graduate from high school in most states. A score of 1 indicates that the student completed either biology or geometry; a score of 2 indicates completion of both biology and geometry; a score of 3 indicates that the student completed either biology and algebra II, or chemistry and geometry; a 4 indicates completion of both chemistry and algebra II.

ESL Placement—In addition to coding courses with a standard scheme, transcript data also included the course titles used by the schools as they appeared on the transcripts. Although the CSSC codes group courses by subject and level (i.e., Algebra I, Organic Chemistry), they do not indicate whether a course is designated ESL (except for the standard ESL courses, which are grouped with foreign-language courses). Relying solely on CSSC codes would have eliminated Sheltered and SDAIE content courses as well as other courses designed specifically to meet the academic and linguistic needs of immigrant linguistic minority students. Thus, we utilized specific course titles, cross-referencing key words and phrases in the transcript and catalog titles to determine whether a course should be coded as ESL. These key words and phrases include the following: EL, ESOL, ESL, SDAIE, ELD, Sheltered, Language Learning, English Development, Immigrant, English Language Development, and Bilingual. From a total of 564,280 unduplicated course records, we identified 2,424 ESL-type courses taken by 502 students, 155 of whom are Mexican-origin. In addition to identifying individuals who ever took ESL in high school, we also identify those who took ESL at their original Add Health high school to indicate that ESL was taken within the school contexts we are measuring. Thus, 475 students took ESL at their original Add Health high school, and 141 of these students are of Mexican origin.

Our primary independent variable of interest is a dichotomous indicator of ESL placement during high school (1 = yes). We operationalize ESL placement as *dichotomous*; our analysis focuses neither on the quality nor quantity of ESL instruction but rather on schools' identification of students placed in ESL as having needs that distinguish them from peers.

Analytic Plan

Propensity Score Matching

We use propensity score matching to estimate the predicted effect of ESL placement on academic success while simultaneously controlling on school context and neighborhood composition, prior achievement, English proficiency, and other factors that are known to be related to ESL identification. (See the Appendix for a complete list.) This method approximates a quasi-experimental design by using observational data to compare outcomes (e.g., academic achievement) for two groups of Mexican-origin youth: (1) a "treatment group" (in this case, students placed in ESL) and (2) a "control group" (students with a similar propensity for ESL placement *not* placed in ESL). The comparison requires several steps. First, utilizing a logit model, one estimates the propensity of treatment group (ESL) placement for all respondents. Then, cases (or groups of cases) in the treatment and control group are matched based on the predicted propensity score calculated above. The next step, which compares those who took ESL to similar students who did not, is relatively simple; an average treatment effect on the treated (ATT) is derived, representing the difference between average outcomes for the

treatment and control groups (Rosenbaum and Rubin, 1983;Becker and Ichino, 2002;Dehejia and Wahba, 2002).

Propensity score modeling techniques have two major strengths. They reduce the selection bias that results from confounding factors simultaneously influencing the treatment (ESL placement) and the outcome(s) of interest, in our case, GPA and math and science enrollment. The most critical confounding factor in this analysis is English proficiency. Propensity score modeling techniques also increase certainty that predicted relationships between treatments (ESL placement) and outcomes are causal (Morgan and Sorensen, 1999; Dehejia and Wahba, 2002). This technique is only as good as the estimated propensity score itself, and two assumptions must be met to ensure confidence in results. First, models predicting respondents' propensity scores must include all covariates predicting the treatment, in this case, ESL placement. The Appendix lists and describes the covariates we use to predict ESL placement, including both individual- and school-level variables. In exploring the effect of ESL placement, English-language proficiency is the most critical confounding factor, and propensity score matching is able to take this and a variety of covariates of ESL placement (Appendix) into account while increasing the likelihood that predicted relationships between treatments and outcomes are causal (Dehejia and Wahba, 2002; Morgan and Sorensen, 1999). Second, the conditional independence assumption (CIA) must be satisfied—the treatment and control groups must be balanced (Rosenbaum and Rubin, 1983). In other words, matched cases from the two groups must be equivalent on covariates predicting the propensity to receive the treatment, here, the propensity for placement in ESL.

Estimating the Propensity of ESL Placement—We use the STATA pscore procedure, which utilizes a logit model to estimate a propensity score representing students' likelihood of ESL placement. This procedure also tests for balance by grouping matched cases in the treatment and control groups into blocks with similar propensities of ESL placement and comparing the distribution of covariates predicting the propensity score within each block (see Becker and Ichino, 2002 for a full review of the STATA pscore procedure). We constructed one propensity score for our total sample of Mexican-origin students in schools offering ESL coursework. We then utilize this score to match cases and estimate group differences in academic outcomes for our eight subsamples: (1) all students in high-concentration schools, (2) all students in low-concentration schools, (3, 4) first-generation students in high- and low-concentration schools, (5, 6) second-generation students in high- and low-concentration schools, and (7, 8) third-generation students in high- and low-concentration schools. We chose this approach (as opposed to the alternative approach—constructing eight different propensity scores, one for each sample) because it brings us closer to estimating propensity scores using a total population. This increases the likelihood of estimating the propensity score well (Morgan and Sorensen, 1999). Ancillary analyses using the alternative approach (not shown) produce no significant differences in results when compared to those shown here.

Theory and prior empirical research (Faltis and Wolfe, 1999; Harklau, 1994) guided decisions about which covariates to use in the model predicting the propensity of ESL placement. Covariates include individual-, family-, and school-level demographic characteristics (generational status, age at Wave I, parents' education, public assistance, region, sector, average class size), linguistic status (student reports usually speaking a language other than English at home), English proficiency (Add Health Peabody Picture Vocabulary Test (AH-PVT)), prior achievement (ninth-grade math course-taking and retention before sixth grade), and parents' and students' social integration into the community context (parent's reason for moving to neighborhood, how happy respondent is in neighborhood, whether the respondent knows a lot of people in the neighborhood). Additional neighborhood context variables include unemployment rates and percent linguistically isolated. Covariates dealing with school context include the proportion of Latino, Mexican, immigrant, and linguistic minority students in the

school, parent education at the school level, urbanicity, class size, and region. We use mean and mode substitution to impute missing values on all covariates predicting the propensity score. Dummy variables representing these cases were used in our final weighted model but are not shown.

We estimate differences in academic achievement between students who were and were not placed in ESL using the kernel matching method to estimate group differences in our outcomes, GPA and math and science coursework completion (Frisco, Muller, and Frank, 2007). Kernel matching utilizes the calculated propensity score to match cases in the treatment group to a composite of control cases that are weighted by the similarity of the propensity to receive the treatment (Heckman, Ichimura, and Todd, 1998). Thus, all control (non-ESL placement) subjects potentially contribute to the weighted composite, improving the power and efficiency of estimation. This is especially valuable when there are many potential matches for each treatment subject, as is the case in our study. The kernel method elegantly combines use of full information of stratification with the continuous conceptualization of propensity scores used in many one-to-one matching procedures.

We bootstrap standard errors using 1,000 repetitions to obtain estimates of a standard error that allow us to assess whether the ATT that kernel matching estimates is statistically significant. Note also that trimming did not produce any significant differences in results estimated with either propensity score matching technique we use in this study.

Results

Table 3 shows estimated differences in academic achievement for Mexican-origin students by ESL placement, school context, and generational status. The left-hand side of the table shows results for Mexican-origin students in low-concentration ESL schools, with the high-concentration ESL schools in the right-hand columns.

In the low-concentration schools, Mexican-origin students placed in ESL perform at significantly lower levels academically relative to their matched counterparts not placed in ESL. When first-, second-, and third-generation students are pooled, we find a negative, although not significant, predicted effect of ESL placement on GPA (ATT = −0.527). In addition, we find a negative and significant predicted effect of ESL placement on enrollment in algebra II and chemistry (ATT = −1.420). Once students in low-concentration ESL schools are disaggregated by generational status, it becomes clear that the negative predicted effect of ESL placement on math and science enrollment is driven by first-generation students (ATT = −1.336). First-generation Mexican-origin students placed in ESL tend not to enroll in either chemistry or algebra II, important college-going prerequisites; the matched students tend to enroll in at least one, if not both, of these courses. In addition, there is a marginally significant, negative predicted effect of ESL placement for third-plus-generation students on junior year GPA (ATT = − 0.638).

In schools with a larger concentration of immigrant students, the average treatment effect of ESL placement for respondents matched on observed covariates predicting placement is positive and significant. Among the pooled matched sample of Mexican-origin students in high-concentration schools, students placed in ESL earn significantly higher grades (ATT = 0.364) and take significantly more math and science (ATT = 0.516) than their mainstreamed counterparts with a similar propensity for placement. Disaggregating by generational status shows that in high-concentration schools it is the second-generation Mexican-origin students who appear to benefit most from ESL placement when compared to their counterparts with similar propensities for placement; the difference in achievement is not only statistically significant, but also substantively significant. Specifically, second-generation Mexican-origin

youth placed in ESL maintain a high C average, as opposed to the low C average earned by their mainstream counterparts (ATT = 0.534). In addition, on average, second-generation Mexican-origin youth placed in ESL enroll in either algebra II or chemistry, if not both, while their mainstreamed counterparts do not (ATT = 0.736). Both the average grades and course taking of the ESL group, while insufficient for admission into a competitive university, are sufficient academic preparation for entry into some level of postsecondary academic institution. In addition, third-generation Mexican-origin students are marginally more likely to complete either algebra II or chemistry when placed in ESL (ATT = 0.634).

Discussion and Conclusions

Our findings suggest that school context may shape the pathways through which ESL placement impacts students' academic achievement and preparation by the end of high school. In brief, immigrant students placed in ESL in schools with higher immigrant concentrations do better than their non-ESL counterparts, and those in schools with fewer immigrants do worse relative to non-ESL-course takers. If ESL placement precludes access to and enrollment in high levels of math and science coursework, as we find in low-concentration schools, then schools actively promote the downward assimilation of Mexican-origin youth placed in ESL. In contrast, when ESL placement produces higher levels of math and science enrollment, as it does for second-and third-plus-generation students in high-concentration contexts, schools facilitate Mexican-origin youths' academic success.

The seemingly protective predicted effect of ESL placement for second- and third-generation Mexican-origin youth in high-concentration contexts suggests that the downward trend in achievement across generations is not inevitable. Schools, as organizational systems, affect the placement of Mexican-origin youth, their achievement, and their integration into the larger socioeconomic fabric of our society. Our findings suggest that there are multiple mechanisms for both social and academic marginalization of Mexican-origin youth in our schools: within schools, as evidenced by the average treatment effect of ESL in low-concentration schools, and across schools, as is the case when we compare high-concentration schools to low-concentration schools. One caveat persists, however; our data are limited in that we are unable to place with certainty students' ESL course taking before or after Add Health surveys, making it impossible to assess the effect of ESL on social outcomes that may be reported in Add Health surveys. This should be a priority for future research.

These findings deserve attention in that most Mexican-origin students in this national sample did not access the levels of content-area instruction necessary for entry into higher education, regardless of ESL placement or the school attended. Although English-language proficiency may well play a role in the underpreparation of Mexican-origin students (Rumberger and Larson, 1998; Valenzuela, 1999; Vigil, 1997), our results suggest that it is likely not the primary factor determining access. As growth of the Mexican-origin population continues to outpace other groups, an undereducated workforce will increasingly affect the national economy (COSEPUP, National Academy of Sciences, and National Academy of Engineering, Institute of Medicine, 2007). This merits careful consideration in the policy arena because of the implications of high school preparation on long-term postsecondary opportunities. If education is the gateway to economic and social success for immigrant children (Suárez-Orozco and Suárez-Orozco, 1995), then critical attention must be paid to these students' access to content-area college preparatory academics. Further research might explore more specifically the curriculum to which Mexican-origin students are exposed, and the breadth and depth of its content.

In identifying that school context appears to shape students' opportunities, this study leaves open questions about possible mechanisms for the outcomes. School composition almost

certainly affects schools' institutional and social climate experienced by immigrant students, and as such contributes to the relatively low academic preparation of Mexican-origin youth (Romo and Falbo, 1996; Vigil, 1997; Valencia, 2002). Future research should explore the institutional and social climates found in schools with both high and low concentrations of immigrants, as the findings from this study suggest that the settings have different implications for immigrant students.

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TABLE 1

Characteristics of Add Health Schools with Mexican-Origin Student Populations (Unweighted)

Variable	Non-ESL Schools N = 41		Low-Concentration ESL Schools N = 18		High-Concentration ESL Schools N = 5	
	Mean	SD	Mean	SD	Mean	SD
Proportion of Mexican-origin students	0.01	0.03	0.02	0.04	0.18	0.26
Proportion of students taking ESL	0.00	0.00	0.04	0.04	0.11	0.04
Proportion students usually speaking language other than English at home	0.03	0.06	0.13	0.11	0.51	0.17
Proportion 1st generation or 2nd generation	0.11	0.09	0.26	0.16	0.67	0.12
Proportion 1st-generation immigrant	0.05	0.06	0.12	0.08	0.31	0.15
Proportion 2nd-generation immigrant	0.06	0.05	0.14	0.09	0.35	0.05
Proportion 3rd-plus-generation nonimmigrant	0.89	0.09	0.74	0.16	0.33	0.12
Proportion black	0.19	0.26	0.15	0.15	0.11	0.08
Proportion white	0.64	0.28	0.44	0.23	0.08	0.07
Proportion Latino	0.08	0.07	0.22	0.15	0.69	0.19
Proportion Mexican-origin	0.01	0.03	0.02	0.04	0.18	0.26
Proportion Asian	0.03	0.04	0.09	0.13	0.09	0.12
Proportion parents with no high school diploma	0.22	0.14	0.29	0.12	0.50	0.10
Proportion parents with college education	0.38	0.20	0.33	0.14	0.18	0.08
Proportion foreign born in student's neighborhood	0.04	0.05	0.10	0.08	0.36	0.20
Proportion age 5+ not speaking English well in student's neighborhood	0.01	0.02	0.04	0.03	0.19	0.14
Proportion linguistically isolated in students' neighborhood	0.01	0.02	0.04	0.04	0.21	0.14

TABLE 2

Mexican-Origin Student Characteristics by Generational Status and School Type (Weighted)

Variables	First Generation				Second Generation				Third Generation			
	Low Concentration N = 41		High Concentration N = 85		Low Concentration N = 65		High Concentration N = 271		Low Concentration N = 63		High Concentration N = 100	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Gender												
Female	0.29		0.60		0.49		0.45		0.45		0.48	
Language												
Usually speak language other than English at home	0.91		0.84		0.66	0.46	0.66		0.03		0.32	
Generational Status												
Arrived before age 5	0.06		0.26									
Arrived age 5 or after	0.94		0.74									
Parent Education												
<High school	0.81		0.86		0.45		0.71		0.22		0.37	
High school	0.07		0.03		0.26		0.24		0.28		0.26	
Some college	0.02		0.04		0.08		0.01		0.28		0.28	
College	0.07		0.04		0.09		0.01		0.22		0.09	
Academic Indicators												
AH-PVT English proficiency	23.90	25.67	14.12	23.96	41.12	26.98	39.14	24.70	48.36		40.90	24.15
Less than algebra in Grade 9	0.49		0.68		0.46		0.40		0.37		0.51	
Retained before Grade 5	0.11		0.26		0.10		0.20		0.08		0.32	
Took ESL	0.68		0.47		0.18		0.08		0.07		0.07	
Parent Indicators												
Receive food stamps	0.04		0.25		0.13		0.14		0.14		0.11	
Academic Outcomes												
Algebra II/chemistry	2.58	1.28	2.63	1.16	2.59	1.49	3.02	1.28	2.62	1.25	2.85	1.27

Variables	First Generation				Second Generation				Third Generation			
	Low Concentration N = 41		High Concentration N = 85		Low Concentration N = 65		High Concentration N = 271		Low Concentration N = 63		High Concentration N = 100	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Junior year GPA	2.81	0.84	2.27	0.89	2.41	0.93	2.43	0.94	2.46	0.74	2.63	0.96

TABLE 3

Estimated Effect of ESL Placement on Grades and Math and Science Enrollment by Concentration of Immigrants in the School and Generational Status

	Low-Concentration Schools				High-Concentration Schools			
	Treatment	Control	SE	ATT	Treatment	Control	SE	ATT
First, Second, Third Combined	$N = 43$	$N = 126$			$N = 98$	$N = 358$		
Junior year GPA	2.524	3.050	0.606	−0.527	2.501	2.137	0.101	0.364 ***
AlgII/chemistry	2.047	3.466	0.498	−1.420 ***	2.898	2.382	0.144	0.516 ***
First Generation	$N = 31$	$N = 10$			$N = 42$	$N = 43$		
Junior year GPA	2.579	1.300	0.969	1.279	2.199	2.094	0.211	0.104
AlgII/chemistry	1.871	3.207	0.446	−1.336 ***	2.405	2.632	0.390	−0.227
Second Generation	$N = 9$	$N = 56$			$N = 42$	$N = 229$		
Junior year GPA	2.555	3.117	0.680	−0.562	2.744	2.210	0.142	0.534 ***
AlgII/chemistry	2.556	2.991	0.795	−0.436	3.286	2.549	0.196	0.736 ***
Third Generation	$N = 3$	$N = 60$			$N = 14$	$N = 86$		
Junior year GPA	1.861	2.499	0.363	−0.638†	2.681	2.315	0.286	0.367
AlgII/chemistry	2.333	2.391	0.545	−0.058	3.214	2.580	0.343	0.634†

***
  $p<0.001$;

† $p<0.10$.

Appendix

Logit Model Predicting Propensity to be Placed in ESL of Mexican-Origin Students in Schools Offering ESL ($N = 625$)

Female	1.21
Parent education: College	1.09
Parent education: Some secondary	0.90
Parent education: Some college	−0.56
Age at Wave I	0.52
Usually speak language other than English at home	0.12
First generation arrived before age 5	−0.28
First generation arrived after age 5	3.83
Second generation	0.48
AH-PVT (English proficiency—vocabulary test)	−0.03
Low math placement Grade 9	1.53
Retained before Grade 6	−2.40
Physical attractiveness	0.11
Parents receive food stamps	−1.62
Respondent happy in neighborhood	0.26
Respondent knows people in neighborhood	−0.87
Respondent visits fitness/recreation center in neighborhood	1.18
Parents moved to neighborhood because of children	0.61
Male unemployment rate in respondent's neighborhood	1.29
Proportion linguistically isolated in respondent's neighborhood	3.40
Average proportion linguistically isolated in respondent's neighborhood in school	21.00
Proportion Latino in school	−15.73
Proportion Mexican in school	3.59
Proportion of students usually speaking language other than English at home at school	8.97
Proportion of parents with no high school diploma in school	12.04
Proportion 1st or 2nd generation in school	−8.27
Average class size in school	0.13
Urban school	−0.89
Rural school	0.92
West	0.06
South	−0.15
Intercept	−13.65
Pseudo R^2	0.56