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Effects on Immigrant Achievement

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Abstract

In this study, the authors explore English as a Second Language (ESL) placement as a measure of how schools label and process immigrant students. Using propensity score matching and data from the Adolescent Health and Academic Achievement Study and the National Longitudinal Study of Adolescent Health, the authors estimate the effect of ESL placement on immigrant achievement. In schools with more immigrant students, the authors find that ESL placement results in higher levels of academic performance; in schools with few immigrant students, the effect reverses. This is not to suggest a one-size-fits-all policy; many immigrant students, regardless of school composition, generational status, or ESL placement, struggle to achieve at levels sufficient for acceptance to a 4-year university. This study offers several factors to be taken into consideration as schools develop policies and practices to provide immigrant students opportunities to learn.

Keywords

English language learners; educational policy; secondary education

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During the 1990s, the numbers of Limited English Proficient (LEP) students in U.S. schools rose by 105% (Kindler, 2002). At the same time, immigrants began to settle in rural and suburban areas, in the Midwest and the Southeast, moving beyond the traditional immigrant receiving communities in California, Texas, New York, and Chicago (Millard, Chapa, & Burillo, 2004). In our current bifurcated global economy, the education our new immigrant students receive will be the most powerful determinant of their future achievement and our nation's economic health. Federal and state requirements under Lau v. Nichols (1974) and Castañeda v. Pickard (1981) mandate the provision of language acquisition services, most commonly in the form of English as a Second Language (ESL) instruction to students identified as LEP. Despite the federal requirements, schools' identification of LEP students and the provision of ESL programs and policies are largely locally defined, varying by state, district, and school (Rivera, Vincent, Hafner, & LaCelle-Peterson, 1997; Zehler, Fleischman, Hopstock, Stephenson, Pendzick, & Sapru, 2003). Local programs and policies evolve in large part in response to the immediate needs of a changing student body (Cosentino de Cohen, Deterding, & Clewell, 2005; Schwartz & Stiefel, 2004).

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Programmatic differences exacerbate the tension that already exists between meeting both the academic and linguistic needs of immigrant linguistic minority students.

Policy makers and educators have long prioritized English acquisition for immigrant students (Gándara, 2002; Lyons, 1990; Wiley & Wright, 2004), arguably at the expense of academic preparation. Although educational policy may prioritize English acquisition, this is not to say that well-developed ESL curriculum has been consistently implemented; in fact, research suggests that a lack of well-articulated ESL instruction has contributed to the permanency of LEP status for many immigrant adolescents (Scarcella, 1996). As the number and proportion of immigrant linguistic minority students requiring ESL services varies by school and community, we hypothesize that the programs will vary in response to the needs of the population.

This study investigates the effect of placement in ESL on academic progress and how it varies across school contexts. An inherent problem in studying this issue is that of endogenous selection bias, that there are factors that influence both ESL placement and achievement. We address this concern by using propensity score matching techniques that account for English proficiency and various other factors. We use a national sample of students and schools to include immigrants in areas that have long had immigrant populations as well as those that have only recently begun to provide services for a small but likely growing population. In addition, we forefront the concentration of immigrant students in the school itself in an effort to better understand differences in policy implementation. Our approach views ESL not as an instructional program to evaluate but rather as an indication that schools label students identified with unique learning needs, which, we argue, may affect the program and preparation they receive while there.

School Organization: ESL Placement, Academic Preparation, and Student Demographics

Traditionally, linguistic minority students score lower than native English-speaking students on standardized assessments (Abedi & Lord, 2001), are more likely to drop out of high school (Watt & Roessingh, 1994), and are less likely to participate in higher education (Klein, Bugarin, Beltranena, & McArthur, 2004). The source of this poor performance is debatable; is it a product of limited English proficiency, poor academic preparation, or a combination of the two (Lam, 1993)? One common limitation of these studies is that they compare students identified for ESL services to native English-speaking students who would have no need for ESL services rather than to other linguistic-minority students. Educators often view English proficiency as an academic gatekeeper for immigrant students (Callahan, 2005; Harklau, 1994a; Minicucci & Olsen, 1993), arguing that students must learn English before they can conquer academic coursework. The preference given to English acquisition over academic training, coupled with organizational constraints inherent in ensuring the delivery of linguistic services required by law, may preclude students' access to either challenging academic coursework or, in all reality, the academic preparation necessary for entry into higher education.

ESL Placement and English Proficiency

Most schools require that students identified for ESL services must first be placed in language instruction classes to comply with state and federal guidelines; although these guidelines do not indicate ESL services specifically but rather full access to a meaningful education, the most common interpretation of the *Lau Remedies* is the provision of ESL services (Lyons, 1990). Only once language instruction has been secured can content area enrollment begin. At the secondary level, ESL programs have two purposes: to develop

language and literacy and to make academic content accessible. For the first purpose, discrete ESL instruction is meant to help students acquire the English literacy skills necessary to compete academically and survive in an English-dominant society (Ferris & Hedgcock, 1998; Scarcella, 2002). For the second, Sheltered or Specially Designed Academic Instruction in English (SDAIE) content area coursework is designed to facilitate access to academic content and college preparatory coursework while students acquire English literacy skills (Chamot & O'Malley, 1996). Although a SDAIE science or math course may be offered, there is no guarantee that the course will meet college entry requirements or even teach curriculum to prepare students for further college preparatory coursework; in fact, previous studies note the tendency for Sheltered and SDAIE coursework to cover less content and to progress at a slower pace compared to mainstream versions of the same courses (Callahan, 2005; Olsen & Jaramillo, 1999). ESL placement thus entails not only local identification of a student's linguistic needs, likely to vary from school to school and district to district, but also a course of instruction that may very well exist entirely outside the academic mainstream.

Immigrant Achievement and Academic Preparation

The most successful programs for secondary immigrant linguistic-minority students forefront access to academic content (Crandall, Bernache, & Prager, 1998; Lucas, Henze, & Donato, 1990; Walqui, 2000), which in turn positively predicts students' written test scores (Wang, 1998). Likewise, students enrolled in more advanced math and science coursework with greater access to academic content demonstrate greater gains in achievement as measured by subject-specific test scores than students placed in less advanced coursework (Schneider, Swanson, & Riegle-Crumb, 1998). Smith (1996) also found that students exposed to algebra prior to high school experienced greater math achievement gains and were socialized into taking more advanced mathematics courses than students not exposed to algebra prior to high school. Similarly, Lee, Croninger, and Smith (1997) find that in schools with limited but primarily academic curriculum, students learned more than in schools with more varied course options. If placement in ESL services constrains immigrant students' exposure to academic content, then the cumulative effects may be substantial.

In addition, if policies governing ESL placement produce organizational constraints in the high school course scheduling process, ESL students are likely placed at an academic disadvantage (Harklau, 1994b,1999). In such cases, course placement, rather than English proficiency, easily converts to the primary predictor of immigrant linguistic-minority students' academic achievement. In theory, course placement is based on preparation, although in reality other factors come into play (Hallinan, 1998;Lucas & Good, 2001;Oakes, 1985). One nonacademic factor that influences course placement is LEP status (Wang & Goldschmidt, 1999), suggesting that schools' ESL policies and subsequent labeling of students affects course enrollment options. At the student level, the effects of stratified course placement are long lasting (Oakes, 1985). In addition, in school contexts with few immigrant students, there may be relatively fewer teachers qualified to teach them (Schwartz & Stiefel, 2004). As administrators work to ensure appropriate linguistic services with ESL qualified teachers, the academic options available to ESL identified students become increasingly limited. Effectively, the high school master schedule may preclude simultaneous enrollment in advanced academic and ESL courses because courses that are offered at few class periods (such as advanced math, certain foreign language courses, and band/orchestra) produce scheduling constraints that shape the students' remaining class assignments (Riehl, Pallas, & Natriello, 1999).

Math and science enrollment is one indicator of immigrant students' academic achievement and language development—a measure that also indicates a students' access to academic content via coursework. Math and science are often perceived to be less language dependent

than social science or English language arts, yet each requires its own content-specific discourse. In addition, completion of math and science coursework is a strong predictor of college enrollment (Adelman, 1999). The preparation students receive in secondary school determines their viability in higher education and in the professional world (Ingels, Curtin, Kaufman, Alt, & Chen, 2002). The preparation these immigrant students receive may have as much to do with their place in the school system as with their proficiency in English. Their enrollment in academic content may be governed by the organizational constraints that ensure their access to language development services; these constraints may well vary by the context of the school and the concentration of immigrant students needing services.

Concentration of Immigrant Students and Schools

Immigrant students'identification for ESL services brings them to the attention of most administrators and educators because of federal requirements regarding the services linguistic-minority students receive (Castañeda v. Pickard, 1981; Lau v. Nichols, 1974). Although ESL services are federally mandated, their quality and quantity vary at the school and district level (Rivera et al., 1997; Zehler et al., 2003). The racial and ethnic composition of schools and their districts also affects student achievement (Bidwell & Kasarda, 1975; Rumberger & Palardy, 2005; Rumberger & Willms, 1992), suggesting that the immigrant representation in a school or community may also influence programs and services such as ESL. Schwartz and Stiefel (2004) found that although a greater concentration of immigrant students in schools correlated with lower per pupil expenditures, they found the opposite to hold true with respect to teacher quality. In addition, schools with greater concentrations of immigrant students correspondingly reported greater proportions of certified teachers (Schwartz & Stiefel, 2004). So although per pupil spending was lower, there appeared to be some recognition of immigrants' distinct pedagogical needs. Immigrant and linguistic minority students experience two very distinct neighborhood and school contexts depending on the concentration of immigrant students in the school community (Cosentino de Cohen et al., 2005). Most immigrants live and attend school in communities where they are in the minority, relatively low-immigrant concentration contexts. However, many reside in high-immigrant-concentration neighborhoods and schools where they make up a sizeable proportion, if not the majority, of the population.

When the proportion of immigrant linguistic minorities grows, schools and local governments often evolve to accommodate the needs of the new community (Meier, Hawes, Sargent, & Theobald, 2005). Social, academic, and linguistic norms also change when a traditionally marginalized group grows significantly (Linton, 2004). In several cases where immigrant students constitute the majority population, schools have produced academically competent graduates by implementing rigorous academic and linguistic curriculum (Nadelstern, 1986; Walqui, 2000). The strategies administrators choose to meet immigrant students' linguistic and academic needs likely depend on the size and prevalence of the immigrant population (Cosentino de Cohen et al., 2005; Crandall et al., 1998; Schwartz & Stiefel, 2004). In school contexts with high concentrations of immigrant students, educators and administrators may view the academic performance of immigrant students as integral to school performance as a whole and thus devote more material and human resources to immigrant student education. Alternatively, when few students need language services, educators may not find it feasible to devote scarce resources to their educational needs. In addition, the availability of teachers qualified to teach ESL and Sheltered or SDAIE courses may further limit placement options in schools that enroll relatively few immigrant students.

The Present Study

ESL classrooms are one component of a larger organizational structure, the school, which responds to the needs of its student body. We hypothesize that the effect of ESL placement

differs according to the concentration of the immigrant population within the school and community it serves. Furthermore, we expect that ESL identification itself will function as a lasting label for students (deJong, 2004; Gándara & Merino, 1993; Linquanti, 2001). Whether the label is externally imposed by the school system or whether it is adopted internally by the student as a facet of his or her identity (Dillon, 2001; Olsen, 2000), its function is likely to vary depending on immigrant students' contexts and the statuses.

In this study, we attempt to evaluate the effect of ESL placement on immigrant student achievement as measured by (a) math and science enrollment, (b) general college preparation coursework, (c) junior-year grade point average (GPA), and (d) cumulative course failures, all important components of preparation for postsecondary enrollment. In addition, we assess how these relationships differ in schools with high and low concentrations of immigrant students. We analyze new, nationally representative data on high school students using propensity score matching techniques, as this method can address the selection bias inherent in studies of ESL placement by controlling for English proficiency, length of residency, and other relevant covariates.

Method

Data

This study uses data from both the National Longitudinal Study of Adolescent Health (Add Health) and its education component, the Adolescent Health and Academic Achievement Study (AHAA), to investigate the influence of high school ESL placement on 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 through 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 and other education data were collected from the last high school that Wave III Add Health respondents attended by the AHAA. Transcripts were collected and coded for 12,250 Wave III respondents, more than 80% of the Wave III Add Health sample. Transcripts were not collected from two original Add Health schools because they were special education schools that did not keep transcript records. 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. Coding schemes are comparable to those used in the National Assessment of Educational Progress High School Transcript Studies and are similar to those used in National Education Longitudinal Study and High School & Beyond.

Sample

Of the 78 original AHAA high schools, 26 offered ESL coursework. Our analytic sample comprises immigrant students attending these 26 ESL schools. We limited our sample to the student population most likely to be placed in ESL coursework—first- and second-generation immigrant students. It is these students who are also most likely to be linguistic minorities (Portes & Rumbaut, 1996). First-generation students are defined as those students

born outside of the United States and second generation as those with one or more foreign-born parents, following the precedence established in the immigration literature (Alba & Nee, 2003; Kao & Tienda, 1995; Portes & Rumbaut, 1996; Rumbaut & Portes, 2001). We initially tried to use a survey item asking students what language is *usually* spoken at home instead of students' immigrant generational status as a filter to identify students who were most likely eligible for ESL identification. However, we determined that this question was not reliable and most likely is not a valid measure of home language or linguistic-minority status. Both social pressure and language acquisition processes lead many linguistic-minority adolescents to report *usually* speaking English with siblings and friends, even though they speak a language other than English at home (Zhou, 1997). Recognizing that among the second generation are many who speak little if any of the home language, we include a measure of English language proficiency in the propensity score. Our final analytic sample consists of first- and second-generation immigrant students in the 26 schools offering ESL courses who completed the Add Health Wave I and Wave III surveys and for whom high school transcripts were available (n = 1,683 students).

Exploratory analyses indicate that ESL coursework is offered in two distinct school contexts, which vary primarily according to the demographic composition of the student body. In one context, a large proportion of the student body is either a first- or second-generation immigrant; we refer to these schools as *high-concentration-immigrant* schools (6 schools). In the second context, immigrant linguistic minority students compose a minority of the overall population; we refer to these schools as *low-concentration-immigrant* schools (20 schools). We hypothesize that ESL placement has different effects on achievement in high- and low-immigrant enrolling schools. Although we cannot determine the pedagogical approaches taken by the schools in our sample, we observe that schools enrolling higher proportions of immigrant students report a wider range of ESL course offerings than schools enrolling fewer immigrant students, suggesting that ESL course options vary across school contexts.

We therefore disaggregated our sample to estimate the predicted effects of ESL placement separately for students attending low and high-immigrant-concentration schools; we present characteristics of the schools in Table 1. The high-immigrant-concentration schools serve predominantly immigrant communities; all six are located in areas with high levels of foreign-born residents, and all six serve high levels of first- and second-generation immigrant students. The student population in the low-immigrant-concentration schools is predominantly nonimmigrant and White. High- and low-immigrant-concentration schools have similar enrollment levels of African American students.

In our analytic sample, 1,169 immigrant students attended the six high-immigrant-concentration ESL schools and 514 attended the 20 low-immigrant-concentration ESL schools. As achievement among immigrant students varies by generational status (Portes & Rumbaut, 1996; Rumbaut & Portes, 2001), Table 2 displays means by generational status within high- and low-concentration schools. In Table 2, we present characteristics of our 6 subsamples: (a) all immigrant students in low-immigrant enrolling schools, (b) all immigrant students in high-immigrant-concentration schools, (c) first- and (d) second-generation immigrant students in low-immigrant-concentration schools, and (e) first- and (f) second-generation students in high-immigrant-concentration schools.

Note that schools with high-immigrant-concentrations enrolled greater proportions of Filipinos and Cubans than did the low-immigrant-concentration ESL schools. As a growing immigrant population, Filipino students have a unique and often complex English language learning perspective in U.S. schools (Cordova, 2000). The 2004 California Department of Education language census reports 20,556 LEP speakers of either Tagalog or Ilocano, the

two primary home languages of Filipino students (California Department of Education, 2007). Filipino students do not begin to compose the majority of the ESL population nationally, but they do compose the largest subgroup among Asian immigrants in this sample. The Filipino presence cannot be overlooked, especially in the high-immigrant-concentration ESL communities, where they constitute a definite plurality of the immigrant population. Mexican immigrant students, the largest group nationally, were relatively evenly distributed across the two school types, although they were more highly represented among second- rather than first-generation immigrants in high-immigrant-concentration schools.

We realize that the effect of ESL placement by race and ethnicity is of interest to some readers, but the purpose of our study is to inform the educational policies that respond to immigrant and linguistic-minority student needs. As public-serving entities, schools typically do not separate ESL instruction for students based on race, ethnicity, or national origin. ESL placement serves all students that the school deems in need of supplemental language support in the same context. With this in mind, we developed our analyses to best match the organizational constraints of secondary schools' programs and policies. We entreat the careful reader to note, however, that exploratory analyses (not shown) reveal that the results presented here are consistent across racial/ethnic groups with large enough sample sizes to support analysis.

Variables

Academic achievement—Our academic outcomes include math and science enrollment, overall college preparatory course enrollment, junior-year GPA, and cumulative course failures. We constructed each variable using data from respondents' high school transcripts. An important measure of academic achievement that is highly predictive of postsecondary enrollment is math and science coursework in general and Algebra II and Chemistry in particular (Adelman, 1999). Math and science enrollment especially is perceived to be less language dependent than English or the social sciences and subsequently less likely to be affected by ESL placement and perceived English proficiency levels. We estimate a combined measure of math and science course completion that ranges from 0 to 4, which we designed to capture students' successful access to college entry coursework, namely Algebra II and Chemistry. A score of 0 indicates that a student did not complete any course beyond algebra or general science, the minimum to graduate from high school in most states. A score of 4 indicates completion of both Chemistry and Algebra II—minimum requirements for admission to a 4-year university.

In addition, to evaluate the extent to which students are prepared for postsecondary enrollment, we estimate overall college preparatory course enrollment, inclusive of all content areas, regardless of perceived linguistic dependence. Our college preparation variable is a sum of the basic 4-year college entry requirements: Chemistry, Algebra II, 4 years of English, 4 years of social sciences, and 3 years of foreign language. College preparation ranges from 0 to 5, with 1 point granted for completion of each of the preceding categories.

GPA is a continuous variable ranging from a low of 0 (F) to a high of 4 (A). Because of the high rate of dropouts among the linguistic-minority population (Klein et al., 2004), we predict junior- rather than senior-year GPA to capture a larger portion of students with GPAs in the sample. Our final outcome, cumulative failure index, represents the proportion of all courses, including nonacademic courses, that student failed across all years of high school This variable ranges from 0 to 1 and is designed to indicate the student's relative success or struggles in the school system regardless of graduation status.

ESL course placement—Our primary independent variable of interest is a dichotomous indicator of ESL placement during high school (1 = *yes*). As this study explores the effects of how schools process immigrant students identified as in need of ESL services, rather than the effects of classroom instruction, we argue that placement in ESL coursework is a viable indicator of schools' labeling policies and processes. In addition to CSSC codes, the transcript data also include the course titles used by the schools as they appear 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 an ESL course in most cases. Relying solely on CSSC codes results in losing Sheltered and SDAIE content courses and other courses designed specifically for LEP designated students. Thus, we rely on specific course titles and cross-reference both transcript and catalog titles to determine whether to code a course as ESL. The process requires taking a course-level file for all transcript study participants and searching for course titles based on keywords/phrases known to indicate ESL-type courses, including but not limited to 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 identify 2,424 ESL-type courses taken in 26 of the 80 original Add Health schools. We identify these 26 schools as the ESL-offering schools in our sample. At the individual level, 508 students from the AHAA study took at least one ESL course in high school (Muller et al., 2007).

Analytic Plan

Propensity score matching techniques—We use propensity score matching techniques to estimate the predicted effect of ESL placement on academic achievement. This method approximates a quasi-experimental design by using observational data to compare outcomes for two groups: (a) a treatment group (in this case, immigrant linguistic-minority students placed in ESL) and (b) a control group (immigrant linguistic-minority students not placed in ESL), while controlling for English proficiency and other relevant variables.

This comparison requires several steps. First, we estimate the propensity of ESL placement for all immigrant linguistic-minority respondents. Then, cases, or groups of cases, in the treatment (those who took ESL) and control (students who did not take ESL) group are matched based on the predicted propensity score calculated in Step 1. 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 (Becker & Ichino, 2002; Dehejia & Wahba, 2002; Rosenbaum & Rubin, 1983).

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, math and science enrollment, college preparation, and cumulative failures. 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 (Dehejia & Wahba, 2002; Morgan & Harding, 2005; Morgan & Sorensen, 1999). 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. Appendix A lists and describes the covariates we use to predict ESL placement, including both individual- and school-level variables. Second, the conditional independence assumption must be satisfied—the treatment and control groups must be balanced (Rosenbaum & 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 uses a logit model to estimate a propensity score representing students' likelihood of ESL placement. The procedure then 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 & Ichino, 2002, for a full review of the STATA pscore procedure).

We constructed one propensity score for our total sample and then used it to match cases and estimate group differences in academic outcomes for our six subsamples. We chose this approach (as opposed to the alternative—constructing six 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 known propensity score (Morgan & Harding, 2005). Ancillary analyses using the alternative approach (not shown) produce no significant differences in results when compared to those shown here.

Theory and prior research guided decisions about which covariates to use in the model predicting the propensity of ESL placement. They include individual and family demographic characteristics (race/ethnicity, gender, generational status, age at Wave I, region, parents' education, family structure, and ninth-grade math placement), linguistic status (language of the Wave I interview and Add Health Picture Vocabulary Test [AH-PVT], English language proficiency), census-derived measures of neighborhood composition (males' unemployment rate and proportion of individuals 5 years of age and older who do not speak English well), and school-level variables (proportion of parents without a high school diploma, proportion of Cubans, and proportion of Filipinos). See Appendix A for detailed descriptions of each variable. We use mean and mode substitution to impute missing values on all covariates predicting the propensity score. In addition, our model is weighted using the cross-sectional transcript weight.

Table 3 shows weighted logistic regression coefficients and standard errors from models predicting students' propensity for ESL placement. As expected, some parental college attendance (when contrasted with high school completion), second-generation immigrant status, ethnicity (White), individuals' AH-PVT English language proficiency, proportion Cuban in school, and neighborhood male unemployment rate negatively and significantly predict placement in ESL; age, language of interview, and ninth-grade math placement positively and significantly predict ESL placement.

This model produced relatively good balance between our ESL placement/treatment and non-ESL placement/control groups within the six propensity blocks produced by the pscore procedure with few exceptions. In the fourth and fifth blocks, which contain matched cases of students with the highest likelihood of ESL placement, we achieve perfect balance. The third block only reports imbalance in family structure. Primarily in our first block, containing matched cases of students with the lowest likelihood of ESL placement, do we find covariates that are not balanced across treatment and control groups (see Appendix B). Because we do not achieve perfect balance, some bias may still exist in our estimated differences between students in our treatment and control groups, especially for students with a low propensity to be placed in ESL coursework.

Estimating the ATT—We estimate differences in academic achievement between students who were and were not placed in ESL with propensity score matching, one of the

many matching techniques that can be used to calculate the ATT (Becker & Ichino, 2002; Frisco, Muller, & Frank, 2007). We use kernel matching to estimate group differences in all four of our continuous outcomes. Kernel matching uses the calculated propensity score to match cases in the ESL placement group to a composite or weighted mean of non-ESL placement cases that are weighted by the similarity of the propensity to receive ESL placement (Heckman, Ichimura, & Todd, 1998). Thus, all control (non-ESL placement) respondents 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 (Frisco et al., 2007). Ultimately, the kernel method elegantly combines use of full information of the stratification method with the continuous conceptualization of propensity scores used in many one-to-many matching procedures.

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

Results

Table 4 shows estimated differences in academic achievement for immigrant students who were and were not placed in ESL. The left-hand side of the table shows results for students in low-immigrant-concentration ESL schools. Comparisons for students in the high-immigrant-concentration ESL schools are shown in the right-hand columns. Outcome variables include math and science enrollment, college preparation, junior year GPA, and cumulative failures.

In low-immigrant-concentration ESL schools, immigrant students placed in ESL performed at significantly lower levels than their mainstreamed peers. When we pool first- and second-generation immigrant youth, we find a significant negative estimated effect of ESL placement on enrollment in Algebra II and Chemistry (ATT = −0.722) and college preparation (ATT = −0.760). Neither the effect on GPA nor the effect on failures overall proves significant.

Once we disaggregate the low-immigrant-concentration ESL school sample by generational status, it becomes clear that the negative effect of ESL placement occurs primarily among first-generation students. We find significant negative predicted effects of ESL placement for respondents matched on observed covariates predicting placement on math and science enrollment and overall college preparation. First-generation students placed in ESL were significantly less likely to enroll in Algebra II or Chemistry, while their mainstreamed matched counterparts with a similar propensity for ESL placement on average completed at least one of these two college preparatory requirements (ATT = −0.904). First-generation ESL students also demonstrated significantly lower rates of overall preparation for college, not quite completing even two of the five required categories, while their mainstreamed peers with a similar propensity for ESL placement completed on average two and a half (ATT = −0.858).

While second-generation students placed in ESL in low-immigrant-concentration schools have lower levels of math and science enrollment, lower college preparation, and more failures, none of these estimated effects are significant.

Turning now to schools serving larger immigrant and linguistic-minority populations, we observe a reversal in achievement patterns. Although the average treatment effect of ESL placement in low-immigrant-concentration schools is negative, the estimated effect is

positive in high-immigrant-concentration schools. ESL placement has a significant, positive effect for matched respondents on Algebra II and Chemistry enrollment (ATT = 0.528) in these schools as well as overall college preparation (ATT = 0.369). Junior-year GPA is significantly higher for students placed in ESL (ATT = 0.324) compared to their peers with similar propensities for placement. The ATT indicates that the ESL group on average earned middle to high Cs (GPA = 2.6), while their mainstreamed peers earned low Cs (GPA = 2.2). Finally, ESL placement results in a significantly lower rate of course failure (ATT = −0.049), with ESL students failing 5% fewer classes than their mainstreamed counterparts. In sum, ESL placement in high-immigrant-concentration schools appears to improve immigrant achievement.

Disaggregating students in high-immigrant-concentration ESL schools by generational status sheds light on important achievement differences. In these high-immigrant-concentration schools, second-generation students derive the greatest benefit from ESL placement. Among first-generation students, mean differences in academic outcome between those enrolled and not enrolled in ESL tend to favor those placed in ESL, but the ATT remains insignificant for all outcomes. Second-generation ESL students, however, perform significantly better on all four outcomes than their mainstreamed peers. ESL placement results in greater enrollment in either, if not both, Algebra II and Chemistry (ATT = 0.755); greater overall college preparation (ATT = 0.778); significantly higher junior-year GPAs, low Bs and high Cs (GPA = 2.7) compared to low Cs (GPA = 2.2) for their mainstreamed counterparts (ATT = 0.494); and a significantly lower rate of course failures (ATT = −0.066).

Discussion

We find that the effect of ESL placement depends not only on the school context and individual generational status but also on the interaction between the two. First-generation ESL students fare poorly in schools enrolling relatively few immigrants, and second-generation students benefit most from ESL placement when they attend schools with many immigrant students. Two separate phenomena may be at work. In low-immigrant-concentration schools, where course offerings are constrained by the limited resources available for a relatively small target population, first-generation students placed in ESL may experience academic marginalization. This marginalization may stem from a paucity of ESL classes and the limited availability of trained teachers and through scheduling constraints could have implications for the other courses available to students. Alternately, they may experience academic and social marginalization because of their status as outsiders and teachers' lowered expectations of their abilities based on their identification for ESL services (Katz, 1999; Lucas et al., 1990; Olsen, 1997). Once placed in the requisite ESL coursework, students' academic options and/or expectations may be limited.

Conversely, in high-immigrant-concentration schools, ESL placement appears to favor second-generation students. In this context, we hypothesize that some of the benefit may come from exposure to first-generation coethnic peers, affirming the findings of prior ethnographic research (Brittain, 2002; Valenzuela, 1999). Second-generation students in ESL may also benefit from exposure to recent immigrant information networks (Brittain, 2002) and the value recent immigrants place on education (White & Glick, 2000). In addition, ESL placement may ensure access to instruction by educators focused on helping students overcome a variety of social, linguistic, and academic obstacles. In addition, teachers of second-generation students in ESL classes may view these students as in-class experts and place them in a position of respect or authority; additional ethnographic inquiry may explore these possibilities. The fact that immigrants compose a sizeable proportion of the student body in the high-immigrant-concentration ESL schools may also position them

in the academic mainstream, rather than in the margins, reinforcing Schwartz and Stiefel's (2004) findings with respect to classroom resources. As an outgrowth of educational policy, ESL placement varies considerably across schools, districts, and states; as such, the students identified for ESL placement will vary as well. Future analyses would benefit from consideration of the cultural and linguistic variability inherent in ESL placement.

The inclusion of proportion failures as an outcome variable was our attempt to disentangle the overall achievement picture for immigrant students. The effect of ESL on failures in low- and high-concentration schools is of opposite sign, although the estimated effect in low-immigrant-concentration schools is statistically insignificant. In high-concentration schools, ESL placement results in significantly lower rates of failure overall and for second-generation immigrant students in particular. Although the effect of ESL placement may in fact keep more immigrant students enrolled in high-immigrant-concentration schools, preventing failures, the important question of their academic preparation remains unresolved. Schools focus not on preparing immigrant students for education after high school but on ensuring that they complete high school (Callahan & Gándara, 2004). The economic payoff to education is only increasing, with postsecondary education a major determinant of many life course outcomes (Smith, 2001). As such, high school graduation will prove increasingly insufficient for access to the majority of jobs, health care, and other features of a middle-class lifestyle in the future.

Although some immigrant linguistic-minority students do go on to attend 4-year institutions, it is important to recognize that the great majority, regardless of ESL placement, generational status, or the schools they attend, exit high school ill prepared for entry into higher education—either in this national sample or in general. ESL courses in high-concentration schools may function to keep students in schools but not necessarily in a substantively significant way, as evidenced by the overall low levels of academic preparation regardless of generational status, ESL placement, or concentration of immigrant students. Although second-generation immigrants in ESL in high concentration fare the best of all immigrant subgroups, they still fall far below college entry requirements in all four outcomes. When keeping immigrant students in schools becomes the end goal, they will likely enter adult society ill prepared to participate in an economically or academically meaningful way.

The tension often articulated in the education of immigrant linguistic-minority students is the need to develop both linguistic and academic skills. A great deal of research focuses on the development of linguistic skills and academic English through content area academic instruction (Chamot, 1995; Kuehn, 1996; Meltzer & Hamann, 2004; Scarcella, 1996, 2002; Snow, 2004; Zamel & Spack, 1998). The fact that most immigrant linguistic-minority students in this national sample did not access the levels of content area instruction necessary for entry into higher education, regardless of ESL placement, merits careful consideration in the policy arena. Although high-immigrant-concentration schools appear to better serve immigrant linguistic-minority students through ESL course offerings, the mean outcome levels of all immigrant students in the schools are still fall far below those required for entry into higher education. If education is the gateway to economic and social success for immigrant children (Suárez-Orozco & Suárez-Orozco, 1996), then critical attention must be paid to these students' access to content area college preparatory academics.

Conclusions must be drawn with caution, however. We stress that our analysis pertains not to the content of ESL instruction but rather to the policies and practices defining ESL programs—and students, for that matter—within schools. Although the effect of ESL placement may be negative in low-immigrant-concentration schools, this is not to say that immigrant linguistic-minority students do not require additional support services. Rather, we

argue that opportunities for ESL students in these schools appear to be insufficient for academic progress at parity with mainstreamed immigrant students.

We should also note that not all schools provide services for students in need even though required to do so by law, and indeed, not all students that require services are immigrants. For example, African Americans who speak vernacular English may require similar services, and we do not consider these students in our conceptual framework that takes immigrant generational status into effect. However, to the extent that these students share characteristics, for example low scores on the English-based AH-PVT, and to the extent that these students are part of the Add Health sample, they will have a higher estimated propensity for taking ESL and they are part of our empirical analysis. As our final estimated effects of ESL only include first- and second-generation immigrant students, it is worth recognizing that our results pertain to ESL students with immigrant parents.

Findings from the present study suggest that some negative estimated effects of ESL placement might be due to the social and institutional marginalization of students into certain courses, especially in low-immigrant-concentration schools. Although ESL placement in high-immigrant-concentration schools produced a positive effect for second-generation students, the caveat remains that there are relatively few high-immigrant-concentration ($n = 6$) schools in the sample, although high-concentration schools do enroll a greater proportion of immigrant students overall ($n = 1,169$). The present study builds on ethnographic research that illustrates the negative impact of institutional marginalization on immigrant achievement in low-immigrant-concentration schools (Katz, 1999; Olsen, 1997). Even when ESL placement is protective, facilitating entry into higher levels of academic coursework, it is not enough. Although some immigrant students in this sample did in fact enroll in a 4-year university, it does not compensate for the fact that immigrant linguistic-minority students as a whole demonstrate relatively low levels of academic preparation. Our findings suggest that there are multiple mechanisms for marginalization at work among immigrant students in our schools: within schools as evidenced in the low-immigrant-concentration ESL schools and between schools as is the case when we compare high-immigrant-concentration schools to the national standards. The focus for immigrant students must shift from simply keeping them in school to ensuring that the time spent there prepares them for the world outside of school. Further research must explore the curricula to which secondary immigrant students are exposed and the breadth and depth of its content.

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Appendix A

Description of Variables Used to Develop ESL Placement Propensity Score

Variable Name	Description	Source
Intact family structure	Two biological parents = 1, other = 0	Wave I in-home
Female	Female = 1, male = 0	Wave I in-home
Northeast	Northeast = 1; West, East, South = 0	Wave I school administration
South	South = 1; West, East, Northeast = 0	Wave I school administration
College	At least one parent completed college	Wave I parent
Some secondary	At least one parent completed some secondary school	Wave I parent
Some college	At least one parent completed some college	Wave I parent
Age at Wave I	Student's age in years	Wave I in-home
Interview in non-English language	Student interviewed in language other than English at Wave I	Wave I in-home
Second-generation immigrant	Student born in United States, one or more parent born outside United States	Wave I in-home
Asian	Student self-report race	Wave I in-home
White	Student self-report race	Wave I in-home
Black	Student self-report race	Wave I in-home
AH-PVT	Cross-sectional PVT percentile rank	Wave I in-home
Low math enrollment Grade 9	Student enrolled in math lower than algebra in Grade 9	High school transcript
Proportion Filipino in school	Aggregated student reports: Filipino ethnicity	Wave I in-school
Proportion Cuban in school	Aggregated student reports: Cuban ethnicity	Wave I in-school
Proportion of parents without high school diploma in school	Aggregated student reports: Neither parents has a high school diploma	Wave I in-school
Proportion age 5+ not speaking English well in student's neighborhood	Proportion of individuals age 5 and older not speaking English well in student's neighborhood	Wave I contextual
Male unemployment rate in student's neighborhood	Male unemployment rate in student's neighborhood	Wave I contextual

Appendix B

Propensity Score Balance by Block

Block Number	Number Treated	Number Control	Covariates Not Balanced
			Region (Northeast)
			Generational status (second generation)
			Low math in ninth grade
			Proportion Filipino in school
			Proportion parents without high school diploma
1	160	866	Male unemployment rate in student's neighborhood

Block Number	Number Treated	Number Control	Covariates Not Balanced
2	74	235	Generational status (second generation)
			Generational status (second generation)
3	80	90	Family structure (intact)
4	60	41	
5	19	7	

Biographies

Rebecca Callahan, PhD, is an assistant professor in the Department of Language and Literacy Education and a faculty affiliate in the Department of Linguistics at the University of Georgia. Her research focuses on the social and academic integration of immigrant language-minority adolescents and young adults. Her main fields of interest include second language acquisition, language policy, language-minority students in U.S. schools, bilingual education, school stratification, and immigration theory.

Lindsey Wilkinson is a PhD candidate in sociology at the University of Texas–Austin. Her current research explores educational processes in high school, both formal and informal, and impact stratification by race/ethnicity, immigrant status, and sexual orientation. Her dissertation focuses on the impact of family and school processes on ethnic self-identification, native-language use, and the civic integration of Latinos transitioning into adulthood.

Chandra Muller, PhD, is a professor in the Department of Sociology and a faculty affiliate at the Population Research Center at the University of Texas–Austin. Her main fields of interest are adolescents, high schools, the transition to postsecondary education, academic achievement, and social relationships. Her research interests include the effects of social context and academic opportunities on adolescents' academic decisions and on adolescents' preparation for postsecondary education. She is the principal investigator of the Adolescent Health and Academic Achievement Study, the educational component of the National Study of Adolescent Health.

Michelle Frisco (PhD, sociology, University of Texas–Austin) is an assistant professor of sociology and demography at Pennsylvania State University. Her research focuses on the intersections of adolescents' family lives, educational experiences, and health and well-being.

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Table 1

School Characteristics by Immigrant Concentration of ESL Course Taking: Unweighted Means and Standard Deviations

	Low-Immigrant-Concentration ESL Schools *n* = 20		High-Immigrant-Concentration ESL Schools *n* = 6	
Variable	**Mean/ Proportion**	**SD**	**Mean/ Proportion**	**SD**
West	0.40		0.33	
Northeast	0.20		0.33	
South	0.30		0.33	
Midwest	0.10		0.00	
Urban	0.20		0.67	
Suburban	0.70		0.33	
Rural	0.10		0.00	
Public	0.95		1.00	
Private	0.05		0.00	
Proportion of students taking ESL	0.06	0.07	0.17	0.07
Proportion of students taking SDAIE ESL	0.02	0.04	0.09	0.11
Proportion Black	0.14	0.15	0.09	0.08
Proportion White	0.48	0.25	0.12	0.13
Proportion Latino	0.20	0.15	0.61	0.25
Proportion Asian	0.09	0.13	0.13	0.14
Proportion first-generation immigrant	0.11	0.08	0.33	0.15
Proportion second-generation immigrant	0.13	0.09	0.34	0.05
Proportion third-plus-generation nonimmigrant	0.76	0.16	0.33	0.10
Proportion parents with no high school diploma	0.25	0.11	0.45	0.12
Proportion parents with college education	0.33	0.13	0.20	0.10
Proportion foreign born in student's neighborhood	0.10	0.08	0.37	0.18
Proportion age 5+ not speaking English well in student's neighborhood	0.03	0.03	0.18	0.13
Proportion linguistically isolated in student's neighborhood	0.04	0.04	0.20	0.13
Proportion students usually speaking language other than English at home	0.12	0.11	0.50	0.15

Note: ESL = English as a second language; SDAIE = Specially Designed Academic Instruction in English.

Table 2

Student Characteristics in Schools Offering ESL by Immigrant Concentration (Weighted): Proportions, Means, and Standard Deviations

	Low-Immigrant-Concentration Schools			High-Immigrant-Concentration Schools		
	First/ Second Combined	First Generation	Second Generation	First/ Second Combined	First Generation	Second Generation
Variables	***n* = 514**	***n* = 202**	***n* = 312**	***n* = 1,169**	***n* = 490**	***n* = 679**
Race						
White	0.19	0.04	0.28	0.05	0.03	0.06
Black	0.07	0.10	0.04	0.01	0.01	0.01
Asian	0.23	0.37	0.17	0.21	0.28	0.14
Filipino	0.44	0.39	0.52	0.60	0.63	0.54
Chinese	0.12	0.10	0.16	0.01	0.01	0.00
Asian Indian	0.01	0.02	0.00	0.04	0.06	0.00
Japanese	0.03	0.02	0.05	0.04	0.00	0.11
Korean	0.03	0.02	0.03	0.09	0.12	0.04
Vietnamese	0.16	0.22	0.06	0.00	0.00	0.01
Other Asian	0.14	0.19	0.07	0.18	0.13	0.25
Multiple response	0.07	0.04	0.11	0.04	0.05	0.05
Latino/a	0.47	0.45	0.45	0.72	0.67	0.77
Mexican	0.62	0.63	0.61	0.49	0.45	0.52
Cuban	0.01	0.00	0.02	0.10	0.11	0.10
Central/South American	0.18	0.21	0.17	0.15	0.31	0.03
Puerto Rican	0.04	0.01	0.07	0.08	0.02	0.13
Other Latino	0.10	0.15	0.07	0.10	0.08	0.12
Multiple response	0.05	0.00	0.06	0.08	0.03	0.10
Gender						
Female	0.46	0.45	0.47	0.49	0.47	0.50
Language						
Usually speak language other than English	0.48	0.71	0.31	0.65	0.78	0.54

	Low-Immigrant-Concentration Schools			High-Immigrant-Concentration Schools		
	First/ Second Combined	First Generation	Second Generation	First/ Second Combined	First Generation	Second Generation
Variables	***n* = 514**	***n* = 202**	***n* = 312**	***n* = 1,169**	***n* = 490**	***n* = 679**
at home						
Parent Education						
Less than high school	0.31	0.42	0.23	0.47	0.47	0.46
High school	0.17	0.10	0.22	0.23	0.15	0.29
Some college	0.13	0.07	0.16	0.12	0.12	0.11
College	0.36	0.36	0.35	0.17	0.24	0.11
Academic indicators						
AH-PVT	40.79 (30.62)	31.43 (30.96)	51.53 (28.33)	33.88 (27.90)	24.93 (28.28)	42.04 (26.45)
Low math	0.31	0.35	0.29	0.45	0.52	0.38

Note: AH-PVT = Add Health Picture Vocabulary Test; ESL = English as a second language. Ethnic groups under both Asian and Latino/a sum to 1.00. Standard deviations in parentheses.

Table 3

Propensity Score Model Predicting ESL Placement

First- and Second-Generation Students in Schools Offering ESL	
***n* = 1,683**	**Beta (*SE*)**
Intact family structure	0.359 (0.272)
Female	0.032 (0.239)
Northeast	−0.086 (0.409)
South	0.306 (0.391)
Parent education: College	−0.458* (0.395)
Parent education: Some secondary	0.100 (0.307)
Parent education: Some college	−1.113 (0.458)
Age at Wave I	0.368*** (0.084)
Interview in non-English language	0.869** (0.336)
Second generation	−1.773*** (0.285)
Asian	−0.409 (0.325)
White	−3.477*** (0.637)
Black	0.227 (0.759)
AH-PVT (English Vocabulary Test)	−0.015** (0.005)
Low math placement Grade 9	0.734** (0.249)
Proportion Filipino in school	2.513 (1.660)
Proportion Cuban in school	−8.375* (3.778)
Proportion of parents without high school diploma	−1.660 (0.994)
Proportion age 5+ not speaking English well in student's neighborhood	0.922 (1.146)
Male unemployment rate in student's neighborhood	3.711 (1.945)
Constant	−5.940*** (−6.677)

Note: AH-PVT = Add Health Picture Vocabulary Test; ESL = English as a second language.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 4

The Estimated Effect of ESL Placement (Treatment) on Immigrant Grades and Math and Science Enrollment by Concentration of Immigrants in the School and Generational Status

	Low-Immigrant-Concentration ESL Schools				High-Immigrant-Concentration ESL Schools			
	ESL Placement	Non-ESL Placement	SE	ATT	ESL Placement	Non-ESL Placement	SE	ATT
First and second combined	*n* = 88	*n* = 426			*n* = 305	*n* = 864		
Algebra II / Chemistry	2.284	3.006	0.266	−0.722**	3.239	2.712	0.082	0.528***
College preparation	1.841	2.600	0.263	−0.760**	2.538	2.169	0.109	0.369***
Junior-year GPA	2.415	2.309	0.187	0.106	2.550	2.227	0.061	0.324***
Cumulative failures	0.111	0.101	0.036	0.011	0.072	0.121	0.009	−0.049***
First generation	*n* = 71	*n* = 131			*n* = 190	*n* = 300		
Algebra II / Chemistry	2.268	3.172	0.320	−0.904**	3.021	2.836	0.117	0.185
College preparation	1.817	2.675	0.462	−0.858**	2.184	2.312	0.126	−0.128
Junior-year GPA	2.408	2.311	0.244	0.097	2.434	2.535	0.080	0.081
Cumulative failures	0.105	0.091	0.041	0.014	0.079	0.096	0.013	−0.017
Second generation	*n* = 17	*n* = 295			*n* = 115	*n* = 564		
Algebra II / Chemistry	2.353	2.520	0.355	−0.167	3.600	2.845	0.088	0.755***
College preparation	1.941	2.445	0.426	−0.504	3.122	2.344	0.120	0.778***
Junior-year GPA	2.444	2.333	0.281	0.111	2.737	2.243	0.083	0.494***
Cumulative failures	0.138	0.142	0.051	−0.005	0.059	0.125	0.012	−0.066***

Note: GPA = grade point average; ESL = English as a second language; ATT = average treatment effect on the treated.

* $p < .05$.

** $p < .01$.

*** $p < .001$.